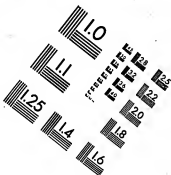
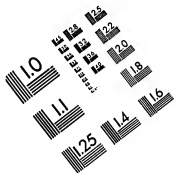


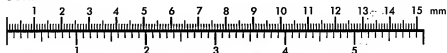


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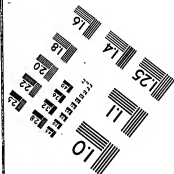
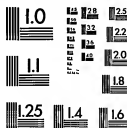
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Centimeter



Inches



# Thomas A Edison Papers

## A SELECTIVE MICROFILM EDITION

### PART II (1879-1886)

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THOMAS A. EDISON PAPERS  
A SELECTIVE MICROFILM EDITION  
PART II  
(1879-1886)

REEL 90

SPECIAL COLLECTIONS SERIES (SPC-1)

Edison Diary

Charles Batchelor Collection  
Journals  
Notebooks

#### SPECIAL COLLECTIONS SERIES, 1879-1886

There are a variety of special collections in the archives of the Edison National Historic Site. They range from single items that do not fit into the main record groups to extensive collections that were donated to, or purchased by, the ENHS. Four such collections contain documents for the period 1879-1886: (1) Thomas A. Edison Diary; 2) Charles Batchelor Collection; 3) Francis R. Upton Collection; 4) John Kruesi Collection.

1) Thomas A. Edison Diary (1885). This is the only known volume kept by Edison to record thoughts and feelings of a personal nature.

2) Charles Batchelor Collection (1871-1912). This collection contains the personal, laboratory, and business records of Edison's principal assistant, Charles Batchelor (1845-1910). Batchelor's papers were donated to the Edison National Historic Site over the period 1957-1961 by his daughter, Emma Batchelor. Also included in the donation are letters and other documents relating to various members of Batchelor's family, including his wife, Rosanna, and his daughter, Emma.

3) Francis R. Upton Collection (1878-1918). This collection contains the personal, laboratory, and business records of Francis Robbins Upton (1845-1921). Upton came to Menlo Park in late 1878 after studying physics at Princeton and in Berlin. He played a major role in the development of Edison's incandescent lighting system. Upton's papers were donated to the Edison National Historic Site in 1963 by Paul Kruesi, the son of Edison's longtime associate John Kruesi. Kruesi had received the papers from Upton's daughter, Eleanor.

4) John Kruesi Collection (1883-1891) [not filmed]. This collection contains photocopies of twelve letters relating to the career of John Kruesi (1843-1899), foreman of Edison's Menlo Park laboratory machine shop and later general manager of the Edison Machine Works in Schenectady. Included among the correspondence are several letters by Edison. The documents relate to electric lighting and to the operations of the Edison Machine Works. These photocopies were donated to the Edison National Historic Site in 1962 by Kruesi's son, Paul. Also included in the donation are photocopies of clippings from the period 1919-1962. The clippings pertain to both Kruesi and Edison.

Although the documents in these collections span the various chronological segments of the Thomas A. Edison Papers Microfilm Edition, the majority of documents date from the period 1878-1886. In order to preserve the integrity of the collections, all of the items selected for inclusion have been filmed in this segment of the edition.

THOMAS A. EDISON DIARY, Cat. 117

This diary, which covers the period July 12, 1885-July 21, 1885, is the only known volume kept by Edison specifically to record thoughts and feelings of a personal nature. Included are observations by Edison on art, literature, and religion, along with comments about his dreams, his health, and his feelings toward his future wife, Mina Miller, and toward his daughter, Marion. Other entries discuss Edison's visits to Woodside Villa, the home of Ezra T. Gilliland near Winthrop, Massachusetts. The pages are unnumbered. Only 44 pages have been used.

CAT. # 117.

Mr. Thomas A. Edison  
"Horseshoe Villa"  
July 14 '85.

Menlo Park N.J.

Sunday July 12 1885-

Awakened at 5.15 AM. my eyes were embarrassed by the sunbeams - turned my back to them and tried to take another dip into oblivion - succeeded - awakened at 7 AM. thought of Mina, Daisy and Mamma G. - put all 3 in my mental kaleidoscope to obtain a new combination a la Galton. took Mina as a basis, tried to improve her beauty by discarding and adding certain features borrowed from Daisy and Mamma G. a sort of Raphaelized beauty, got into it too deep, mind flew away and I went to sleep again. Awakened at 8.15 AM.

Poweful itching of my head, lots of white dry dandruff - what is this damnable material, Perhaps its the dust from the dry literary matter I've crowded into my noddle lately. Its nomadic. gets all over my coat, must read about it in the Encyclopedia. Smoking too much makes me nervous - must lessen my natural tendency to acquire such habits - holding heavy cigar constantly in my mouth has deformed my upper lip, it has a sort of Navanna curl. Arose at 9 o'clock came down stairs expecting twas too late for breakfast - twasnt. couldnt eat much, nerves of stomach too nicotiney. The roots of tobacco plants must go clear through to hell. Satans principal agent. Dyspepsia

must have charge of this branch of the vegetable kingdom.

— It has just occurred to me that the brain may digest certain portions of food, say the ethereal part, as well as the stomach — perhaps dandruff is the excreta of the mind — the quantity of this material being directly proportional to the amount of reading one indulges in. A book on German metaphysics would thus easily ruin a dress suit. After breakfast start reading Hawthorne's English Note Book don't think much of it — perhaps I'm a literary barbarian and am not yet educated up to the point of appreciating fine writing — 90 per cent of his book is descriptive of old churches and graveyards and coroners — He and Geo Selwyn ought to have been appointed perpetual coroners of London.

Two fine things in the book were these.

Hawthorne shewing to little Rose Hawthorne a big live lobster told her it was a very ugly thing and would bite everybody, whereupon she asked "if the first one God made, bit him" — again "Ghostland is beyond the jurisdiction of veracity"

— I think freckles on the skin are due to some salt of Iron, sunlight brings them out by reducing them from high to low state of oxidation — perhaps with a powerful magnet applied for some time, and then with proper chemicals, these mud holes of beauty might be removed. Dot is

very<sup>1</sup> is very busy cleaning the abode of our deaf and dumb parrot—she has fed it tons of edibles, and never got a sound out of it. This bird has the taciturnity of a statue, and the dirt producing capacity of a drove of buffals.

This is by far the nicest day of this season, neither too hot or too cold,—it blooms on the apex of perfection — an Edonday Good day for an angels pic nic, They could lunch on the smell of flowers and new mown hay, drink the moisture of the air, and dance to the hum of bees, Fancy the Soul of Plato astride of a butterfly riding around Menlo Park with a lunch basket

Nature is bound to smile somehow, Holzer has a little dog which just came on the veranda. The face of this dog was a diabol as a bust of Dante, but the dog wagged its tail continuously— This is evidently the way a dog laughs — I wonder if dogs ever go up to flowers and smell them—I think not— flowers were never intended for dogs, and perhaps only incidentally for man, evidently Darwin has it right. They make themselves pretty to attract the insect world who are the transportation agents of their pollen, pollen freight via B<sup>ee</sup> line.

There is a bumblebees nest somewhere near this veranda, several times one came near me—some little information (acquired experimentally) I obtained when a

small boy causes me to lose all delight in watching the navigation of this armed flower burglar.

Had dinner at 3 P.M. ruins of a chicken, rice pudding - I eat too quick - at 4 o'clock Dot came around with her horse "Colonel" and took me out riding - beautiful roads - saw 10 acre lot full cultivated red raspberries. "A burying ground" so to speak - got this execrable pun off on Dot Dot says she is going to write a novel, already started on - she has the judgement of a girl of 16 although only 12.

We passed through the town of Metuchen, this town was named after an Indian chief, they called him Metuchen the chief of the rolling lands, the country being undulating. Dot laughed heartily when I told her about a church being a heavenly fire-escape.

Returned from drive at 5 P.M. commenced read short sketches of life: Macaulay, Sidney Smith, Dickens, & Charlotte Bronte, Macaulay when only 4 years ago omnivorous reader, used book language in his childish conversation, when 5 years old, lady spilled some hot coffee on his legs, after awhile she asked him if he was better - he replied - "Madam the agony has abated" Macaulay's mother must have built his mind several years before his body. Sidney Smith's flashes of wit & perfect to call them chestnuts would be literary blasphemy.



They are wandering jewels to wander forever in the printers' world. Don't like Dickens—don't know why. I'll stock my literary cellar with his works later.

Charlotte Brontë was like DeQuincy. what a nice married couple they would have been. I must read Jane Eyre.

— played a little on the piano—its badly out of tune—two keys have lost their voice,

Dot just read to me outlines of her proposed novel, the basis seems to be a marriage under duress— I told her that in case of a marriage to put in bucketfuls of misery. This would make it realistic, speaking of realism in painting etc. Steele Mackaye at a dinner given to H. H. Porter, Wm Winter and myself told us of a definition of modern realism given by some Frenchman whose name I have forgotten. "Realism, a dirty long haired painter sitting on the head of a bust of Shakespeare painting a pair of old boots covered with dung." The bell rings for supper. I go.

Sardines the principal attraction—on seeing them was attacked by a stroke of vivid memory of some sardines I eat last winter that caused a rebellion in the labyrinth of my stomach—could scarcely swallow them today.

They nearly did the "return ball" act. After supper Dot pitched a ball to me several dozen times - first I ever tried to catch. It was a hard as Nero's heart - nearly broke my baby-finger - gave it up - learned Dot and Maggie how to play "Duck on the rock" They both thought it great fun, and this is Sunday - My conscience seems to be oblivious of Sunday - it must be incrustated with a sort of irreligious tartar. If I was not so deaf I might go to church and get it taken off or at least loosened - eccavi I will read the new version of the Bible.

Holzer is going to use the old laboratory for the purpose of hatching chickens artificially by an electric incubator. He is very enthusiastic - gave me full details - he is a very patient and careful experimenter - think he will succeed - everything succeeded in that old laboratory - Just think electricity employed to cheat a poor hen out of the pleasures of maternity - Machine born chickens - what is home without a mother.

I suggested to H that he vaccinate his hens with chicken pox virus, then the eggs would have their embryo hereditarily innoculated & none of the chickens would have the disease. For economy's sake he could start with one hen and rooster. He being

a scientific man with no farm experience I explained the necessity of having a rooster, he saw the force of this suggestion at once, The sun has left us on time, am going to read from the encyclopædia Britannica to steady my nerves and go to bed early. I will shut my eyes and imagine a terraced abyss, each <sup>terrace</sup> occupied by a beautiful maiden to the first I will deliver my mind and they will pass it down down to the uttermost depths of silence and oblivion - Went to bed worked my imagination for a supply of maidens, only saw Mina Daisy & Mamma Schemo busted-sleep.

Woodside Villa  
Boston Harbor

Menlo Park N.Y. July 13 1885

Woke (to there such a word) at 6 o'clock - slipped down the declivity of unconsciousness again until 7. arose and tried to shave with a razor so dull, that everytime I scraped my face it looked as if I was in the throes of cholera morbus. By shaving often I too a certain extent circumvent the diabolical malignity of these razors - If I could get my mind down to details perhaps could learn to sharpen it, but on the otherhand I might cut myself - As I had to catch the 7.30 am train for New York. I hurried breakfast, crowded meat potatoes, eggs, coffee, tandem down into the chemical room of my Gody. I've now got dyspepsia in that diabolical thing that Carlyle calls the stomach, rushed and caught train - Bought a New York World at Elizabeth for my mental breakfast - Among the million of perfected mortals on Manhattan island two of them took it into their heads to cut their naval chord from mother earth and be born into a new world, while two other less developed citizens stopped two of the neighbors from living - The details of these two little

incidents conveyed to my mind what beautiful creatures we ~~live~~ live among, and how with the aid of the police, civilization so rapidly advances — Went to New York via Deobrosses Street ferry—took cars across town — saw a women get into car that was so tall and frightfully thin as well as dried up that my mechanical mind at once conceived the idea that it would be the proper thing to run a lancet into her arm and knew joints and insert automatic self feeding oil cups to diminish the creaking when she walked — Got off at Broadway—tried experiment of walking two miles to our office 65 5th ave with idea it would alleviate my dyspeptic pains — It didn't — Went into Scribner's Sons on way up saw about a thousand books I wanted right off Mind No 1 said why not buy a box full and send to Boston now — Mind No 2 (acquired and worldly mind) gave a most withering mental glance at mind No 1 and said You fool, buy only two books, these you can carry without trouble and will last until you get to Boston, Buying books in N York to send to Boston is like "carrying coals to Newcastle" of course I took the advice of this

earthy adviser — Bought Aldrich's Story of a bad boy which is a spongecake kind of literature, very witty and charming — and a work on Goethe & Schiller by Boyesen which is soggy literature, a little with an anecdote in this style of literature would have the same effect as baking soda on bread, give pleasing results. —

Waited one hour for the appearance of a lawyer who is to cross-examine me on events that occurred 11 years ago — went on stand at 1130 — He handed me a piece of paper with some figures on it, not another mark, asked in a childlike voice if these were my figures, what they were about and what day 11 years ago I made them — This implied compliment to the splendor of my memory was at first so pleasing to my vanity that I tried every means to trap my memory into stating just what he wanted — but then I thought what good is a compliment from a 10 cent lawyer, and I waived back my recollection.

A lawsuit is the suicide of Time. — Got through at 330 PM — waded through a lot of accumulated correspondence mostly relating to other people's business — Insull saw Winan about getting car

for Railroad Telegraph experiment - will get costs in day  
or so. — Tomlinson made Sammy mad by saying  
he Insull was Valet to my intellect = got \$100  
met Dot and skipped for the Argosy of the  
Puritan Sea; (10) Sound Steamboat, — Dot is reading  
a novel - rather trashy, Love hash. — I completed  
reading Aldrich's Bad Boy and advanced 50 pages  
in Goethe then retired to a "Sound" sleep

Woodside Villa July 14 1885.

Dot introduced me to a new day at 5.30 am.  
Arose - toileted quickly - breakfasted - then went from  
boat to street car - asked colored gentleman, how  
long before car left - worked his articulating  
apparatus so weakly I didnt hear word he said.  
- its nice to be a little deaf when travelling  
you can ask everybody directions then pump  
your imagination for the answer, it strengthens  
this faculty. - Took train leaving at 7 from  
Providence for the metropolis of culture - arrived  
there 9 AM "Coupaïd" it to Damons office  
- waited  $\frac{3}{4}$  hour for his arrival. Then left for the  
Chateau-sur-le-Mer - If I stay there much  
longer Mrs. L. - will think me a bore - perhaps  
she thinks I make only two visits each year in  
one place each of 6 months - Noticed there  
was no stewardess on the ferry boat, strange  
omission considering the length of the voyage  
and the swell made by the tri-monthly boat to  
Nantasket. - Man with a dusty railroad Co  
Expression let down a sort of portentous



and the passengers poured themselves out - Arrived  
Winthrop Junction found Patrick there according to  
telephonic instructions, another evidence that the  
telephone works sometimes, Patrick had the Americanized  
Dog cart and incidentally a horse, suppose Patrick  
would forget the horse, because last week he went  
into Boston to Damons city residence and turned  
on the gas + started up the meter from a state  
of innocence to the wildest pervanication, <sup>+ forgot to turn gas off</sup> - Arrived  
at Woodside Villa and was greeted by Mamma  
with a smile as sweet as a cherub that buzzed  
around the bedside of Raphael - A fresh  
invoice of innocence and beauty had arrived in  
my absence in the persons of Miss Louise Igoe and  
her aunt Miss Igoe like Miss Daisy is from  
Indianapolis, that producer of hoosier venus's  
Miss Igoe is a pronounced blonde, blue eyes, with  
a complexion as clear as the conscience of a  
baby angel, with hair like Andromache  
Miss Igoe's aunt is a bright elderly lady who  
beat me so bad at checkers that my bump of  
"Strategic combination" has sunk in about two

inches — for fear that Mrs. G. — might think I had  
an inexhaustible supply of dirty shirts, I put on one  
of those starched horrors procured for me by Tomlinson  
— put my spongy mind at work on life & death —  
Chewed some Tulu gum presented me by Mrs. G. —  
Conceived the idea that the mastication of this chunk  
of illimitable plasticity — a dentiferous tread-mill  
so to speak, would act on the salivial glands to  
produce an excess of this necessary ingredient  
of the digestive fluid and thus a self-acting home  
made remedy for dyspepsia could be obtained  
— believe there is something in this as my dyspeptic  
pains are receding from ~~from~~ recognition  
— Dot is learning to play Lange's "Blumenlied"  
on the piano — Miss Goe I learn from a  
desultory conversation is involved in a correspondence  
with a brother of Miss Mina who resides at Canton  
Ohio being connected with the Mower & reaper  
firm of Auttman & Miller The letter received today  
being about as long as the girls at the Grand  
Hotel at Paris are I surmise of rather a  
serious character, cupid-ly speaking

The frequency of their reception will confirm or disaffirm my conjectures as to the proximity of a serious catastrophe — A postoffice courtship is a novelty to me, so I have resolved to follow up this matter for the experience which I will obtain — This may come handy should

"My head ever become the dupe of my heart"  
as papa Rochefoucauld puts it. — In evening went out on sea wall — noticed a strange phosphorescent light in the west, probably caused by a baby moon just going down Chinaward thought at first the Aurora Borealis had moved out west — Went to bed early dreamed of a ~~demons~~ Demon with eyes four hundred feet apart.

Woodside Villa July 15 1885

Slept well - Breakfasted clean up to my Adams apple - took shawl strap and went to Boston with Damon with following memorandum of things to get.

Avatar on the human face - Miss Cleveland's book - Heloise by Rousseau - short neckties - Wetherlu Meister - Basket fruit - Sorrows of Werther - Madam Recamiers works - Diary books - pencils Telephone documents Mark Twains gummed Potentiality of literature (ie) scrap book. - also book called "How success is won" containing life of Dr Vincent & something in about Minas father and your humble servitor.

Found that only copy of Avatar which I saw the other day had been sold to some one who was on the same lay as myself Bought Disraeli's Curiosities of literature instead - Got Miss C's book - Twains scrap book - Diary books, How Success is won also fruit among which are some peaches which the vendor said came from California - think

of a lie 3000 miles long - There seemed to be a South Carolina accent in their taste - Started back to office with fruit, apparently by the same route I came, brought up in a strange street saw landmark and got on right course again. Boston ought to be buoyed and charts furnished strangers - Damon suggests American District Messenger buoys with uniform - Saw a lady who looked like Mina - got thinking about Mina and came near being run over by a street car - If Mina interferes much more will have to take out an accident policy - Went to dinner at a sort of No-bread-with-one-fishball restaurant then came up towards Damons office, met Damon Madden and Ex Gov Howard of Rhode Island, The Governor whom I know and who is very deaf greeted me with a hoarse yard voice, He has to raise his voice so he can hear himself to enable him to check off the accuracy of his pronunciation. The Governor never has much time, always in a hurry - full of business, inebriated with industry - If he should be on his death bed I believe he would

call in a shorthand clerk to dictate directions for his funeral, short sketch of his life, taking a press copy of the same in case of litigation. Madden looks well in the face but I am told its an Undertakers blush - Went to Damons office he was telling me about a man who had a genius for stupidity when Vail came in dressed like Beau Brummel, both went into another room to try some experiments on Damons Phonometer - Saw Hovey a very very bright newspaper man told me a story related to him by a man who I never would have imagined could or would have told such stories. I refer to a gentleman in the employment of the Telephone Co who Tomlinson nicknamed "Prepositum" because he got off that word in a business conversation, his eminent respectability so impressed Tomlinson that when he came out of his office asked me to take him quickly somewhere discrepitable so he could recover. This story would have embarrassed Satan - I shall not relate it but I have called it "Prepositums Turkish Compromise" Hovey told me a lot about a 6th sense, mind reading etc

made some suggestions about Railroad Telegraph  
— Came home with Damon at 5 o'clock — Damon  
has an ulcerated molar — Just before supper  
Mrs Roberts and another lady came in to visit Mrs G.  
Mrs R is a charming woman — Condensed ~~sun~~  
sunshine — Beautiful — plays piano like a long  
haired professor — played several of Lange's pieces  
first time seeing them, This seems so incomprehensible  
to me as a man reciting the Lord's prayer in four  
languages simultaneously — Mrs R promised to come  
tomorrow evening and bring with her a lady who  
sings beautifully and a boy dripping with music  
— Everyone after supper started their Dixiey Mrs G  
Lgoe — Daisy + Dot went to bed at 1130.  
forgot two nights running to ask Damon for night  
shirt — That part of my memory which has charge  
of the night shirt department is evidently out of  
order.

Woodside Villa July 16 1885

I find on waking up this morning that I went to bed last night with the curtains up in my room - Glad the family next door retire early - I blushed retroactively to think of it - Slept well - weather clear - warm. Thermometer prolongately progressive - day so fine that barometer anaesthized - breakfasted - Diaried at lot of nonsense - Read some of Longfellow's Hyperion, read to where he tells about a statue of a saint that was attacked with somnambulism and went around nights with a lantern repairing roofs, especially that of a widow woman who neglected her family to pray all day in the church. Read account of two murders in Morning Herald to keep up my interest in human affairs - Built an air castle or two - Took my new shoes out on a trial trip - Read some of Miss Cleveland's book where she goes for George Eliot for not having an heavenly ~~avenue~~ streak of imaginative twaddle in her poetry - The girls assisted by myself trimmed the Elizabeth collars on twelve daises; inked eyes nose & mouth on the yellow part which gave them a quaint human look, paper dresses were put on them



and all were mounted on the side of a paper box and labelled "The Twelve Daughters of Venus" I hope no College bred dude will come down here and throw out iminations that Venus was never married, and never had any children anyway - Girls went in bathing. Me and Damon went out in the steam yacht sailed around over the lobster nursery for an hour or so - In the evening Damon started a diary - Very witty - Miss Igoe told Damon she couldnt express her admination, whereupon he told her to send it by ~~Express~~ freight. Lunched our souls on a Strauss waltz played by Miss Daisy, then we all set around the table to write up our diaries, I learned the girls how to make shadow pictures by use of crumpled paper - we tried some experiments in mind reading which were not very successful, think mind reading contrary to common sense, wise provision of the Bon Dieu that we cannot read each others minds would stop civilization and everybody would take to the Woods in fifty or hundred thousand centuries when mankind have become perfect by evolution then perhaps this sense could be developed with safety to the state, Damon

and I went into a minute expense account of our proposed earthly paradise in the land of flowers, also a duplicate north and we concluded to take short views of life and go ahead with the scheme. It will make a savage onslaught on our bank account. Damon remarked that now all the wind work is done there only remains some little details to attend to such a "raising the money" etc. Mrs Roberts hurt her soprano arm and could not come over an play for us as promised and thus we lost her perfumed conversation lovely music and serene smile - la femme qui-rit - Since Miss Igge has been reading Miss Cleveland's book her language has become <sup>disyllabic</sup> ~~disyllabic~~ and ponderous, stiff and formal, each observation seems laundried -

If this weather gets much hotter, Hell will get up a reputation as a ~~cool~~ summer resort. Not asked how books went in the mail, Damon said as second class ~~mail~~ matter, I said Me and Damon would go at this rating - suggested that Mina would have to pay full postage, Damon thought she should be registered - This reminds me that I read the other day of a man who applied for a situation as sexton in the Dead Letter office - ~~Occasional~~ sisters

and I went into a minute expense account of our proposed earthly paradise in the land of flowers, also a duplicate north and we concluded to take short views of life and go ahead with the scheme. It will make a savage onslaught on our bank account. Damon remarked that now all the wind work is done there only remains some little details to attend to such a "raising the money" etc. Mrs Roberts hurt her soprano arm and could not come over as planned for us as promised and thus we lost her perfumed conversation lovely music and serene smile - la femme qui-rit - Since Miss Igoe has been <sup>reading</sup> Miss Cleverlands book her language has become ~~disyllabic~~ <sup>disyllabic</sup> ponderous, stiff and formal, each observation seems laundried -

If this weather gets much hotter, Hell will get up a reputation as a ~~very~~ summer resort. Not asked how books went in the mail, Damon said as second class matter, I said Me and Damon would go at this rating - suggested that Mina would have to pay full postage, Damon thought she should be registered - This reminds me that I read the other day of a man who applied for a situation as sexton in the Dead letter office - Daisies sisters

photograph rests on the mantel, shews very beautiful  
girl every fly that has attempted to light on it  
has slipped and fallen, going to put piece chalk near  
it so they can chalk their feet, this will permit with  
safety the insectivorous branch of nature to gaze upon  
a picture of what they will attained after ages of  
evolution. Ladies went to bed, this removed the  
articulating upholstery, then we went to bed,

Woodside Villa July 17 1885-

Slept so sound that even Mina didn't bother me<sup>as</sup> It would stagger the mind of Raphael in a dream to imagine a being comparable to the Maid of Chatagwa so I must have slept very sound - As usual I was the last one up, This is because I'm so deaf - found everybody smiling and happy - Read more of Miss Clevelands Book, think she is a smart woman - relatively - Damons diary progressing finely - Patrick went to city get tickets for Opera of Polly, we can compare with Sullivan - We are going out with the ladies in yacht to sail perchance to fish, The lines will be gated at both ends, Constantly talking about Mina who me an Damon use as a sort of yardstick for measuring perfection makes Dot jealous, She threatens to become an incipient Lucretia Borgia, Hottest day of season - ~~Merod~~ Hill must have sprung a leak, at two oclock went out on yacht - cooler on the water, sailed out to the Rock-buoy. This is the point where Damon goes to change his mind, he circles

The boat around several times, like a carrier pigeon before starting out on a journey, then we start right - dropped anchor in a shady part of the open bay - I acted as Master of the fish lines, delivered them baited to all. The clam Coquets were thrown to the picatorial actors - Miss Daisy caught the first he came up smilingly to seize the Coquet when she jerked him into the dress circle, genus unknown - I caught the next - genus uncertain, The next was not caught. Fish seem to be rather conservative around this bay, one seldom catches enough to form the fundamental basis for a lie - Dante left out one of the torments of hades - I could imagine a doomed mortal made to untangle wet fish lines forever - Everybody lost patience at the stupidity of the fish in not coming forward promptly to be murdered - We hauled up anchor, and Damon steering by the compass, (he being by it) made for the vicinity of Apple island - While approaching it we saw a race between two little model vessels full rigged and about 2 feet long - Two yawl boats filled apparently with US naval officers and men.

were following them, Are these effeminate pursuits a precursor of the decline and fall of a country as history tells us. - Landed at clock 4<sup>30</sup>. Came into Villa and commenced reading Lavater on Facial Philosophy - Dot saw a jelly fish and vehemently called our attention to this translucent chestnut, - Barque called to take us to theatre via Winthrop Junction and Railroad. when we arrived at junction found we should have to wait some time, so we took an open street car for City - while passing along saw man on Bicycle, asked Damon if he ever rode one. He said he did, once practiced riding in large freight shed where floor was even with door of cars and three feet from ground, one day from reason he never could explain he went right through one of the doors to the ground, I remarked that I supposed he kept right on riding. No said Damon I jumped back. Arriving at Ferry Boat I asked Damon if it was further across River high<sup>at</sup> said he thought it was a he noticed the pipes in the ship were at a slight angle - Arriving on the other side took Street Gondola, arrived near top of Hananah Street. when horses were unable to pull cars to the

Woodstocke Villa July 18 1883 -

top of the hill, car slipped back, the executive department of my body was about to issue a writ of ejectment when some of the passengers jumped out and stopped Car; one passenger halloed out to let her go they would get more ride - Arriving a little too early for theatre, went to an Ice cream bazar frigidified ourselves, Then went to theatre, where we found it very hot, Solomon the Composer came from the cellar of fairies and sprung a chestnut overture on the few mortals in the audience chamber, Then the Curtain arose showing the usual number of servant girls in tights. - The raising of the panapoly of fairyland let some more heat in - a rushing sound was heard and Daman said they were turning on the steam ~~was~~ - The fairies mopped their foreheads - perspiration dripped down on stage from the painted cherubs over the arch - after numerous military evolutions by the chorus Miss Ethel Russell made her appearance - Beautiful woman, sweet voice, Wore a fur lined cloak which I thought about as appropriate in this weather as to clothe the



firemen on the Red Sea Steamers in sealokui  
overcoats - noticed one or two original strains  
the balance of the music seemed to be Bagpipean  
Improvisations - Didn't hear anything that  
was spoken except once when I thought I heard  
one of the actors say that his mother ~~sings~~  
sung in the Chinese ballet - Our seats  
were in the Galleyhead section, After Theatre  
walked to ferry boat - Saw a steamer passing  
brilliantly lighted Mrs. asked what could be  
nicer than a lighted steamer on the waters at  
night - somebody suggested two steamers -  
arrived at Sister ferry, took RR train, Saw Miss  
Russell with her last husband Mr. Solomon get on  
train, they stop I believe at the sea shore near us  
- Home - Bed - Sleep -

Woodside July 18 1885

last night room was very close, single sheet over me seemed inch thick— Bug proof windows seem to repel obtrusiveness on the part of any prowling Zephyr that might want to come in and lunch on perspiration, Rolled like a ship in a typhoon, if this weather keeps on I'll wear holes in the bed clothes, Arose early Weather blasphemingly hot— went out in sun, came back dripping with water, tried to get into the umbrella rack to drain off, took off two courses of clothes This would be good day to adopt Sidney Smith's plan of taking off your flesh and sitting down in your bones. Mem— Go to a print cloth mill and have yourself run through the Calico printing machine, This would be the Ultima Thule of thin clothing, Read some in Avatar, ~~Mr~~ Recamier, Rousseau's Emile, Laid down on sofa—fell asleep—Dreamed that Damon had the sunstroke and was laid on the floor of his office, where he swelled up so that he broke the floor above and two Editors of a baseball journal fell through and were killed, Thought the chief of the

fire department came in and ordered holes to be bored in him  
Then something changed the dream saw a lot of animals  
which such marvellous characteristics as would be  
sufficient to bust up the whole science of paleontology  
— Cuvier, Buffon & Darwin never could have started  
their theories had a few samples of these animals ever  
browsed around <sup>on</sup> this little mud ball of ours — After a  
survey of this vast imaginative Menagerie I woke up  
by nearly falling off the sofa, found the heat  
had reached the apex of its malignity — Went out  
yachting — All the ladies in attendance — I was  
delightfully unhot, Ladies played game called  
memory — Scheme No 1 calls out name of prominent  
author No 2 Repeats this name and adds another room  
or, soon one has to remember a dozen names all of  
which must be repeated in the order given — result  
Miss Daisy had the best & I the poorest memory —  
We played another game called "pon honor," resultant  
of which is that if you are caught you must  
truthfully answer a question put by each  
player, These questions generally relate to the  
Amours of the players. — Arrived home at 7.30

Yacht brought in too far and left stranded by the  
receding of the tide, Suppered, went out and ~~was~~  
saw some fire works set off by an unknown  
sojourner in these Ozonic parts, afterwards went  
over to Cottage Park at the kind invitation of the  
Charming Mrs Roberts to hear the band play pro  
bono publico and her boy exclusively, Boy is  
quite a prodigy on the piano, plays with great  
rapidity, his hand and fingers went like a buzz saw,  
played a solemn piece which I imagined might be  
God Rest the Queen, In walking back Miss Dgoe  
got several boulders in her shoes, Miss Daisy  
smiled so sweetly all the evening that I imagined  
a ray of ~~at~~ sunshine tried to pass her and got  
stuck, Mrs Roberts caught cold in her arm its  
cough is better, home-bed-oblivion -



Recamier, I would like to see such a woman. Nature seems to be running her factory on another style of goods nowadays and won't switch back until long after the bald-headed — Damon went out to assist the tide in — Daisy told me something about a man who kept livery stable in Venice, In afternoon went out in yacht, on first trip all our folks, and lot of smaller people, sailed around for an hour returned and landed the abbreviated people — Started for Cottage Park where we took on board the Charming Mrs Roberts' brief Recamier, and a large lady friend whose name has twice got up and jumped out of my mind, Then sailed away for Rock buoy and for some occult reason Damon didn't stop and change his mind but headed for Liverpool went out two miles in ocean; undulations threatened to disturb the stability of the dinner of divers persons, returned at 7 pm. Then Damon took out a boat load of slaves of the Kitchen — Damon and I after his return study plans for our Floridian Gower in the lowlands of the peninsular Eden, within that charmed zone of beauty, where wafted from the table lands of the Orinoco and the dark Carib sea, perfumed zephyrs forever

Kiss the gorgeous flora, Rats! — Damon took the plans to Boston to place them into the hands of an Architecturalist to be reduced to a paper reality — Damon promised to ascertain probable cost: chartering schooner to plough the Spanish main loaded with our hen coops — Dot came in and gave us a lot of girlish philosophy which amused us greatly. — Oh dear this celestial mud ball has made another revolution and no photograph yet received from the Chataquain Paragon of Perfection, How much longer will Hope dance on my intellect

Miss Igoe told me of a picture she had taken on a rock at Panama ny. There were several others in the group, interpolated so as to dilute the effect of Mina's Beauty, as she stated the picture was taken on a rock I immediately brought my scientific imagination to work to ascertain how the artist could have flowed collodium over a rock and put so many people inside his Camera, Miss Igoe kindly corrected her explanation by stating that a picture was taken by a Camera of a group on a rock, — thus my mind was brought back from a suspicion of her verbal integrity to a belief in the honesty of her narrative

After supper Mrs. L, Daisy and Louise with myself as an incidental appendage walked over to the town of Ocean Spray, went into a drug store and bought some alleged candy, asked the gilded youth with the usual vacuous expression, if he had any nitric peroxide, he gave a wild stare of incomprehensibility. Then I simplified the name to nitric acid, which I hoped was within the scope of his understanding. A faint gleam of intelligence crept over his face whereupon he went into another room from which he returned with the remark that he didn't keep nitric acid - fancy a drug store without nitric acid, A drug store nowadays seems to consist of a frontage of Red Blue and green demijohns a soda fountain, Case with <sup>bottles</sup> candy and toothbrushes, a lot of almost empty <sup>bottles</sup> with death and stomacatic destruction written in Latin on them, all in charge of a young man with a hatchet shaped head, hair parted laid out by a civil engineer, and a blank stare of mediocrity on his face, that by comparison would cause a gum indian in the Eden Muscè look intellectual - On our return I carried the Terrealbian gum drops, - moon was



shining brightly - girls called my attention several times to beauty of the light from said moon shining upon the waters, couldn't appreciate it, was so busy taking a mental triangulation of the moon the two sides of said triangle meeting the base line of the earth at Woodside and Akron Ohio, Miss Lgoe told us about her love of ancient literature, how she loved to read latin, but couldn't, I told her I was so fond of Greek that I always rushed for the comedies of Aristophanes to read whenever I had the jumping toothache; Bed - Mine, Morning,

Weds July 20 1865

Arose before anybody else - came down and went <sup>out</sup> to look at Mamma Earth and her green clothes - Breakfasted - Read aloud from Madame Recamiers memoirs for the ladies - kept this up for an hour got as ~~hoarse~~ hoarse as a fog horn, think the ladies got jealous of Madame Recamier, - its so hot - I put everything off - Hot weather is the mother of procrastination - my energy is at ebb tide - Im getting calorically stupid - Tried to read some of the involved sentences in Miss Chelseas book, mind stumbled on a ponderous perioration and fell in between two paragraphs and lay unconscious for ten minutes - Smoked a cigar under the <sup>alias</sup> ~~alias~~ of Reina Victoria think it must have been ~~under~~ seasoned in a sewer - Mrs Clark told me a story about Louises mother singing in a company a song called I have no home, I have no home, somebody halloed out that he would provide her with a good home if she would stop. I understood Mrs Clark to say that this gentleman was a

Bookkeeper in a small pox hospital - Mrs. Q has placed fly paper all over the house; These cunning Engines of insectivorous destruction are doing a big business - One of the first things I do when I reach heaven is to ascertain what flies are made for - this done I'll be ready for business, perhaps I am too sanguine and may bring up at the other terminal and one of my punishments will be a general ukase from Satan to keep mum when Edison tries to get any entomological information - Satan is the scarecrow in the religious confid - Towards Sundown went with the ladies on yacht - Talked about love, cupid, appollo, Adonis, ideal persons one of the ladies said she had never come across her ideal - I suggested she wait until the second Advent, - Damon steered the galleon, Damons heart is so big it inclines him to embourpoint - On shore it was hot enough to test Safes but on the water twas cool as a cucumber in an arctic cache - Mrs. Q has promised for three consecutive days to have some claims a la Toft, she has perspired her memory all away -

Been hunting around for some ants nests, so  
I can have a good watch of them laying on the  
grass - Dont seem to be any around - dont think  
an ant could make a decent living in a land  
where a Yankee has to emigrate from to survive, -  
For the first time in my life I have bought a pair  
premeditatedly tight shoes - These shoes are small  
and look nice my No 2 mind (acquired mind)  
has succeeded in convincing my No 1 mind (primal  
mind or heart) that it is pure vanity, conceit and  
folly to suffer bodily pains that once person may  
have grace the outcome of secret agony - Read the  
funny column in the Traveller and went to bed,

Woodside July 21 1885 -

Slept splendidly - evidently I was inoculated  
with isomnic bacilli when a baby - arose early  
went out to flirt with the flowers, & I wonder  
if there are not microscopic orchids growing on  
the notes of the air - Saw big field of squashes  
throwing out their leafy tentacles to the wind  
preparing to catch the little fleeting atom for  
assimilation into its progeny the squash gourd  
- A spider weaves its net to catch an  
organized whole, how like this is the vegetable  
living plant, the leaves and stalk catch the  
primal <sup>free</sup> atom, all <sup>are</sup> then arranged in an  
organized whole; Heard a call from the house  
that sounded like the <sup>flow within speech</sup> shriek of a lost angel,  
it was a female voice three sizes too small  
for the distance and was a call for break-fast  
- after break-fast laid down on sofa, fell into  
light draught sleep dreamed that in the depth  
of space, on a bleak and gigantic planet the  
solitary soul of the great Napoleon was the sole  
inhabitant, I saw him as in the pictures, in

contemplative aspect with his blue eagle eye. amid  
the howl of the tempest and the lashing of  
gigantic waves high up on a jutting promontory  
gazing out among the worlds + stars that studded  
the depths of infinity Miles above him circled  
and swept the sky with ponderous wing the  
imperial condor bearing in his talons a  
message, then the scene Gusted - This comes from  
reading about Napoleon in Madame Recamiers  
memoirs. Then my dream changed - Thought I  
was looking out upon the sea, suddenly the air  
was filled with millions of little cherubs as one  
sees in Raphael's pictures each I thought was about  
the size of a fly. they were perfectly formed + seemed  
semi-transparent, each swept down to the surface  
of the sea, reached out both their tiny hands  
and grabbed a very small drop of water, and  
flew upwards where they assembled and appeared  
to form a cloud, This method of forming clouds  
was so different from the method described in  
Gannet's Physics that I congratulated myself on  
having learned the ~~trick~~ true method and was

Thinking how I would gloat over the chagrin of those cold blooded Savans who would dissect an angel or boil a live baby to study the perturbations of the human larynx, Then this scheme was wrecked by my awakening - The weather being cool went out on Veranda to exercise my appreciation of Nature, Saw bugs, butterflies as varied as Prangs Chromos, Birds innumerable, flowers with as great a variety of color as Calico for the African market, Then to spoil the whole two poor miserable mortals came, who probably carry the idea that this world was created for them exclusively and that a large portion of the Creators time was specially devoted to hearing requests, criticisms and complaints about the imperfection of the natural laws which regulate this mud ball - What a wonderfully small idea mankind has of the Almighty - My impression is that he has made unchangeable laws to govern this and billions of other worlds and that he has forgotten even the ~~self~~ existence of this little mote of ours ages ago. Why cant

man follow up and practice the teachings of his own conscience, mind his business, and not obtrude his purposely created finite mind in affairs that will be attended to without any volunteered advice,  
— Came into the house at the request of the ladies and read aloud for two hours from the Memoirs Racamier — then talked on the subject of the tender passion, the ladies never seem to tire of this subject — then supper ~~some~~ Some Trovatores du Pavé made their appearance and commenced to play — I requested the distinguished honor of their presence on the Veranda — After supper weather being cool but rather windy, took our Trovatores on the yacht and all hands sailed out in the bay — Had to go around an arm of the bay to get coal — water splashed so I got dashed wet. Three several times the water broke loose from the iron grasp of gravitation and jumped on my 65 dollar coat But when one of the ladies got a small fragment of a drop on his dress ~~of course~~ orders were issued to make for port — landed and



took our Travellers to house several ladies  
hiring houses for the summer brought their  
husbands with them and helped sop up the  
music - afterwards Mrs & Mr & hospitably  
by firing off several champagne bottles and  
some of those delightful Cookies, I do believe  
I have a big bump for Cookies, The first entry  
made by the recording angel on my behalf  
was for stealing my mothers cookies, 11 o'clock  
came and the pattering of many footsteps upon  
the stairs signalled the coming birth of silence  
only to be disturbed by the sonorous snore  
of the aimable Damon and the demonic  
laughter of the amatory family Cat

## CHARLES BATCHELOR COLLECTION, 1871-1912

The Charles Batchelor Collection contains the personal, laboratory, and business records of Edison's principal assistant, Charles Batchelor (1845-1910). Batchelor's papers were donated to the Edison National Historic Site over the period 1957-1961 by his daughter, Emma Batchelor. Also included in the donation were letters and other documents relating to various members of Batchelor's family, including his wife, Rosanna, and his daughter, Emma.

Most of the material relating directly to Batchelor's association with Edison has been filmed. The documents appear on the microfilm in the following order: (1) Journals; (2) Notebooks; (3) Patents; (4) Unbound Documents; (5) Letterbooks; (6) Accounts; (7) Scrapbooks.

(1) Journals. The eight books in this set contain a daily record of Batchelor's personal and professional activities during much of the period between 1877 and 1906. The entries in the first four books cover the years 1877-1878, 1883, and 1886-1892 and deal extensively with Edison, his inventions, and his businesses. These books have been filmed in their entirety. The remaining books date from the period 1898-1908, after Batchelor left Edison's employ. Included in one of these books are reminiscences by Batchelor about several of Edison's principal inventions. The last book contains notes by Batchelor about his childhood — the first part of an unfinished autobiography. Except for the reminiscences about Edison, the material in these books has not been filmed.

(2) Notebooks. The eighteen books in this set contain notes and drawings relating to experiments conducted by Batchelor, Edison, and others during the years 1874-1909. Fifteen books relate directly to work performed for Edison. All of these books have been filmed, with the exception of one book from the 1890s recording routine ore assays for Edison's mining operations. Three other notebooks have not been filmed: two books from the early 1880s (not by Batchelor) containing tests of French storage batteries and comparisons of Edison's electric lighting system with other systems; and one personal notebook containing notes and experiments by Batchelor from 1889 through 1905.

(3) Patents. Included in this series is one volume of Edison's British patents (1872-1880) and one volume of Edison's U.S. patents (1869-1879). Also included are numerous unbound patents issued to Edison, Batchelor, and other inventors. Only the volume of Edison's British patents has been filmed. A complete set of Edison's U.S. patents can be found in Thomas A. Edison Papers Microfilm Edison, Part I, reels 1-2.

(4) Unbound Documents. These documents cover the years 1871-1910 and consist of correspondence, technical notes, agreements, accounts, and other items relating primarily to Batchelor's work with Edison. Most of the material concerns Batchelor's activities during the 1880s as manager of the Edison electric light interests in France (1881-1884) and as manager of the Edison Machine Works (1884-1888). A few documents pertain to Batchelor's work as Edison's principal laboratory assistant and to the operations of the Edison Phonograph Works. Batchelor's family correspondence, along with documents relating to the period after he left Edison's employ, have not been filmed.

(5) Letterbooks. The six books in this set cover the years 1875-1890 and contain copies of Batchelor's personal and business correspondence. Many of the letters discuss Edison, his inventions, and his businesses. Selections from all six books have been filmed.

(6) Accounts. The three books in this set cover the years 1878-1893 and contain Batchelor's personal accounts. Only one book, which includes Batchelor's accounts with Edison, has been filmed.

(7) Scrapbooks. The fourteen books in this set cover the years 1876-1912. The clippings in six of the scrapbooks relate primarily to Edison and his inventions during the years 1876-1893. Another scrapbook contains correspondence from the years 1881-1882. These books have been filmed. Seven other books have not been filmed: a scrapbook of engravings; three scrapbooks containing prices and specifications for Edison's dynamos; and three scrapbooks, dating from the 1890s and 1900s, which contain only scattered references to Edison.

In addition to the items discussed above, the Batchelor Collection also contains a number of miscellaneous manuscripts, printed documents, photographs, and artifacts. Included among this miscellaneous material are photograph albums, portraits of Batchelor and Edison, an autograph collection, and a stamp collection. The artifact collection includes several light bulbs, numerous medals, and a bronze bust of Edison. The printed material consists primarily of trade catalogs, litigation records (filmed elsewhere), and a few newspaper and journal articles.

#### CHARLES BATCHELOR JOURNALS, 1877-1908

The eight books in this set contain a daily record of Batchelor's personal and professional activities during much of the period between 1877 and 1908. The first four books deal extensively with Edison, his inventions, and his businesses. Included are entries relating to the development of Edison's phonograph and telephone; Batchelor's role as Edison's representative in Paris; the construction and operation of the West Orange laboratory; and the technical and business aspects of electric lighting, ore milling, and the phonograph during the early West Orange period. The remaining books date from the period after Batchelor left Edison's employ. Included in one of these books are reminiscences by Batchelor about several of Edison's principal inventions. The last book contains notes by Batchelor about his childhood — the first part of an unfinished autobiography.

The following books have been filmed:

1. Cat. 1233 (1877-1878)
2. Cat. 1343 (1883)
3. Cat. 1336 (1886-1887)
4. Cat. 1337 (1887-1892)
5. Cat. 1339 (1905-1908) [reminiscences only]

The following books have not been filmed:

1. Cat. 1345 (1898-1902)
2. Cat. 1338 (1903-1905)
3. Cat. 1344 (1907)

Charles Batchelor Journal, Cat. 1233

This journal covers the period January 1, 1877-April 8, 1878 and contains entries by Batchelor about his experiments on the electric pen, phonograph, and telephone. Other entries deal with the quadruplex telegraph and Batchelor's personal affairs. The book contains 365 pages, numbered by an archivist. After writing the entry for December 31, 1877, Batchelor returned to the first page of the book and began recording entries for 1878. Pages 1-98 (January 1-April 8) thus contain entries for both 1877 and 1878. The front cover is stamped "Diary 1877."



TUESDAY, JANUARY 2, 1877.

Monday Jan 2 1877  
Went to Newark and took direct telephone for  
Newark. Dined with Newmy. & afterwards  
went to the Miller company with him  
to see about bundles  
Saw Mr Barton in New York.

WEDNESDAY, JANUARY 3, 1877.

Thursday Jan 3. 1877  
Worked on telephone all day. & s. Monographs

THURSDAY, JANUARY 4, 1877.

Wheat put out well up on its place -

Friday Jan 4 1877  
Worked on telephones & Stereographs  
Karton here all day abstracted

FRIDAY, JANUARY 5, 1877.

Saturday Jan 5, 1877  
Worked on Telephones & Stereographs



SATURDAY, JANUARY 6, 1877

Sunday Jan 6 1877  
Telephones all day

SUNDAY, JANUARY 7, 1877.

Monday Jan 7. 78.  
Went to New York  
Set up telephone circuit between McWalter  
room and 39 40 Building  
Went to Kahn's Shop about telephones  
Went to Ruzmann's Shop about telephones

MONDAY, JANUARY 8, 1877.

Friday Jan 8 1878  
Came from at New York setting up telephone  
Home all day

TUESDAY, JANUARY 9, 1877.

Wednesday Jan 9 1878  
Home all day. Copy. in Tel. & Telegraph.  
St. Green, W. Schenckhorn & a few reported  
here today

WEDNESDAY, JANUARY 10, 1877.

Thursday Jan 10 1878  
Worked all day on Telephone and phonograph

THURSDAY, JANUARY 11, 1877.

Edison found out this night that when two  
distances were put into <sup>opposite</sup> ~~different~~ solution and the current  
flowed and closed that there was a sound given off.

Friday Jan 11 1878  
Johnson and Mr. Claver here today  
Mr. McKenzie here at night

FRIDAY, JANUARY 12, 1877.

Saturday Jan 12 1877  
Worked all day on Phonograph & Telephone  
McKenzie came

SATURDAY, JANUARY 13, 1877

Attended Court on Suit of Gold vs. Odgers  
Gold could not produce base or copy of it and the  
case was left till some future time to be appointed by  
mutual consent of both sides. SB

Sunday 1877  
McKenzie here and tested with Bell's  
+ our telephone all day

SUNDAY, JANUARY 14, 1877.

Made some experiments on Capillary force of oil  
see Experimental researches Vol. 1, page...

Monday Jan 14 (1877) 71° F  
Worked on telephones all day

MONDAY, JANUARY 15, 1877.

Met Bliss in New York today.

Tuesday Jan 15<sup>th</sup>  
Jim showed telephone & phonograph  
at Metuchen to a church  
Edison A. Johnson gave Otton a  
test of all the telephones from  
1878 & away Jim's music came in  
as Otton said that Edison's  
instrument was the best articulation  
& loudest.

16  
TUESDAY, JANUARY 16, 1877.

Experimented at night on the sound produced from the escape of gas as the electrodes in different positions on closing the circuit.

The Powell boys were at Laboratory today.

Wednesday Jan. 16 1878  
Worked on telephone all day

72  
WEDNESDAY, JANUARY 17, 1877.

Edison Ag. I opened an plan of forming a company of the Foreign Editors of the New York Herald & Co. to be thought very favorably of it.  
Worked on autographic rotary power press  
B. R. 1st 1 Page

Thursday Jan 17 1878  
Showed Phonograph, Speaking & singing telephones to Cooper Union, American Institute at night.

16  
THURSDAY, JANUARY 18, 1877.

Friday Jan 18 1878  
All day in Phonograph Telephone.  
McCloughlin & Boyd Elliott came in  
afternoon  
Krugman bought coils & bells.

17  
FRIDAY, JANUARY 19, 1877.

Edison, Batchelor, and Johnson inventors signed  
contract with the Amm. Novelty Co. turning over to  
them the rights in the Latent, Patent, and Indicator.

Saturday Jan 19 1878  
Edison, wife, I and Rosa went to see Heller.  
Worked on Phonograph & telephone all  
day.

SATURDAY, JANUARY 20, 1877.

Bought Rutledge dictionary, Morris rose & Co 93  
Crosby's householders.  
New York to-day.

Sunday Jan 21 1877  
Worked on Phonograph & Telephone all day

SUNDAY, JANUARY 21, 1877.

Gave up smoking as it does not seem to  
agree with me.  
Wrote to Frary for Edison's repeating trace.

Monday Jan 22 1877  
Phonograph & Telephone all day



MONDAY, JANUARY 22, 1877.

Stayed home working on a new rotary press  
& P. H. 1 page.

Tuesday Jan 22 1878

Mr. Quakas here today & his telephone  
worked on Monograph & telephone all day.  
Packed & shipped Quakas' goods.

No Ettinger & friends here at night  
Ogan came.

TUESDAY, JANUARY 23, 1877.

Stayed home working on a new rotary press

Wednesday Jan 23 1878  
Bagman here in evening gave him  
drawing for new box.

Worked all day on telephone & Monograph

20  
WEDNESDAY, JANUARY 24, 1877.

Stayed home working on new rotary press

Thursday Jan 24 1878  
Went to New York and took Peaslee's mail  
He sailed today on Cimbria for  
Cebu.

25  
THURSDAY, JANUARY 25, 1877.

Went to New York. Press very much delayed  
from Chicago -  
Worked till 22 AM 26<sup>th</sup> on rotary  
press for duplicating writing.  
Right eye very sore all night with cold.

Friday Jan 25 1878  
Worked all day on Monograph

26  
FRIDAY, JANUARY 26, 1877.

Lift eye very sore all night - and cold.  
New York all day.

Saturday Jan. 26<sup>th</sup> 1877  
Worked on Phonograph all day  
Two students from Stevens Institute here  
all day  
H. Thau here all morning

27  
SATURDAY, JANUARY 27, 1877.

Rosa and I went to Union square Theatre to  
see Clara Morris in Miss Mollie.  
Night 7<sup>th</sup> 8, 9, 11, 12, 13. of Janel at 5 o'clock.  
New York all day.

Sunday Jan 27 1877  
Worked all day on Phonograph and telephone

SUNDAY, JANUARY 28, 1877.

Monday Jan 28, 1877.

Went to New York at 11<sup>th</sup> Edison and I  
Dined at night with C. H. Chubb and went to  
Tony Pastor's afterwards went to N. O. Operating  
room - 12 2 A.M. then slept at Coker house

MONDAY, JANUARY 29, 1877.

Went to New York.

Received C.O.D. \$100.00 from Dayton and Co -  
Edison gave Carter and broached the subject of getting  
100 per week to pay expenses at laboratory.  
Received press from Tinton that had been on fire.

Tuesday Jan 29 1877

Went to Ansonia Conn with James Sawyer, Edison  
Went through the Ansonia Brass and Copper  
factory  
Worked till 2 A.M. on Phonograph got lost  
talking on copper instead of tinplate.

90  
TUESDAY, JANUARY 30, 1877.

Went to New York and wrote all assignments  
of invention to Novelty Co.  
Worked at night on Rotary press for duplicating copy.

Wednesday Jan 31 1877.  
Ansonia Conn all day with Edison and  
Danks and Fleming working on Phonograph.  
Came home at night.

91  
WEDNESDAY, JANUARY 31, 1877.

Wrote Tom in relation to the Iron Pul Co.  
Wrote Robert Greenland about 12 month work.

Thursday Jan 1 1878  
Worked all day on telephone.  
First snow of the winter.

THURSDAY, FEBRUARY 1, 1877.

Went to New York to get copper and rubber belt for  
rotary press. Returned 12 H.  
Selected 3 letters from Edison & sent them to Mr. Mason  
James and Mason at West Point.  
Wrote let on rotary press and automatic feed.

Friday, Feb 1<sup>st</sup> 1877.  
Went to New York all day.

FRIDAY, FEBRUARY 2, 1877.

Stayed at home today. As sent to J. B. Mason, New York.  
Worked all day on rotary press (duplication).

Saturday Feb 2 1877  
Worked all day on telephones.

SATURDAY, FEBRUARY 3, 1877.

Went to New York

Saw Fogg, &c. they had sample of writing done in Newham  
which they wanted to know what was the matter with it  
but I am too slow to explain the signs of it, they  
were very much surprised.  
Wrote Tom, Henry.

Sunday Feb 3 1877

All day on telephone and phonograph

SUNDAY, FEBRUARY 4, 1877.

Went out in the woods with Jim  
Worked on Battery at night -

Monday Feb 4 1877

All day on Telephone tried experiment  
with Penney of Philadelphia we talked  
to him and he got it all right we also  
talked to Washington  
Steven. Suckett sent boy for Phonograph

MONDAY, FEBRUARY 6, 1877.

Went to New York.

Sent 2 letters and one electotype to Henry Engsten.  
Worked all night on Rotary Autographa press

Tuesday Feb 6 1877

Went to New York today

Called on Bergmann. He gave me chkt for \$21 -

TUESDAY, FEBRUARY 6, 1877.

Went to New York -

Sent goods to Fuller by 'City of New York' collect at  
Durand - Friday -

Wednesday Feb 6 1877

Designed model phonograph for Duckart  
fell at Paris collection  
started on the type.



WEDNESDAY, FEBRUARY 7, 1877.

Went to New York today.  
Bought rubber and parchment for Edison speaking  
graph.  
Finished rotary pen experiments having got a  
self feed and all necessary.

Thursday, Feb 9 1877  
Worked on designing phonograph.

THURSDAY, FEBRUARY 8, 1877.

Went to New York  
Worked at night on Rotary pen got the  
experiments all fixed and it now remains  
to design the instrument.

Friday Feb 8 1877.  
New York Called at Seymour's, Coaklets,  
Fitch & Manser, Hays, Patterson etc.  
Made model drawing for suit for show principles  
of Edison Speaking phonograph.

Edison got offer for Speaking phonograph  
by Cable from Budkas ~~Feb 8~~ & Hall,  
Tells he called back. wants sell for \$5000

40  
FRIDAY, FEBRUARY 9, 1877.

New York today.

Collected 117.12 Grand.

Worked O.P. at laboratory today highly delighted  
Hart's working on Talking telegraph design  
was being to get the same conditions as the thing  
by increasing or decreasing the resistance of the  
circuit according as you speak loud or soft.

Saturday Feb 9, 1877.  
Designing Monograph all day.

41  
SATURDAY, FEBRUARY 10, 1877.

Went to New York

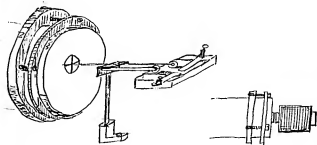
Letter from Robert Quilbent saying he could not pay  
note for 60 or 90 days.

Sunday Feb 10 1877  
Designing Monograph —

SUNDAY, FEBRUARY 11, 1877.

MONDAY, FEBRUARY 12, 1877.

Stayed at home and worked all day on a new  
talking telegraph.  
Letter from Tom, Mother, & Father,



TUESDAY, FEBRUARY 13, 1877.

Worked all day on Talking Telegraph.  
Rijf at laboratory at night left at 9 P.M.  
Net Chest from W. A. Myer & Co \$500.49 —  
Talking wire, not much good as yet very  
little encouragement from instruments.

WEDNESDAY, FEBRUARY 14, 1877.

Went to New York to-day  
Dutelin about to give up the Dist. Exp. of Anna has  
Worked on Talking Telegraph at night  
Anna sick all night with sore throat but better  
toward morning. —

THURSDAY, FEBRUARY 15, 1877.

Went to New York today. —

Gamma better to-day but still a little unwell.

P. N. T. 25-

*Free*

FRIDAY, FEBRUARY 16, 1877.

Worked in Laboratory all day on Talking Telegraph

Received note of Robert Williamson back unpaid.

SATURDAY, FEBRUARY 17, 1877.

New York to day -

Gave McLaughlin 1 doz eggs

Got them sent clothes \$50 -

Paid Stephens rent 25¢

RRT 48

SUNDAY, FEBRUARY 18, 1877.

Laboratory all day designing Rotary press.

Hovered at day all day taking some over stone.

McLaughlin some ore found in Common property which  
appears to be full of iron.

Wrote till 3 AM 19<sup>th</sup>

SATURDAY, FEBRUARY 17, 1877.

New York to day -

Gave McLaughlin 1 doz eggs

Got new suit clothes \$50 -

Paid Stephens rent \$5.00

787 48 m

SUNDAY, FEBRUARY 18, 1877.

Laboratory all day designing rotary press.

Wrote today, all day taking some over notes.

McLaughlin some ore found on Carmans property which

appears to be full of iron.

Wrote till 3 AM 19<sup>th</sup>

MONDAY, FEBRUARY 19, 1877.

Laboratory all day on Rotary press designs  
Snow-storm about 4 inch deep in morning.

TUESDAY, FEBRUARY 20, 1877.

New York all day. R.T. 40 m.  
Worked all night on Talking Telegraph made  
the 8 reed instrument  
S



WEDNESDAY, FEBRUARY 21, 1877.

Went to New York today. RRT 45.  
 Red check for 200 - from N. Guilford & Co.  
 credited on note of 1200 -  
 Recd letter from N. & W. J. C. on 24 of Oct. 1876.  
 Sent 3 h's 2 p.m. to Hunter & Hunter check 60.00  
 Letter from Jim with photo of his train -

Thursday Feb 21 1877  
 Gave photograph telephone camera for No. 100  
 at church in 16<sup>th</sup> St. & 10<sup>th</sup> Ave New York  
 I did the business at the N. Y. Tel. Co for  
 them -

THURSDAY, FEBRUARY 22, 1877.

Home all day. Fixed meat in the coop -  
 This here in the middle of day  
 Nora and I went to New York at night  
 and visited Kelly & Son's minister  
 RRT 45

Friday Feb 22 1877  
 Designing all day on photograph battery  
 clock and try.

54  
FRIDAY, FEBRUARY 23, 1877.

Went to New York today  
Cable from Electric Writing Co for 50 pens 100 pens  
Got the 2 batteries sent by them this day.

RRT 45-

Saturday Feb 23 1877  
Designing all day on Phono-  
Head + - - down hill today

55  
SATURDAY, FEBRUARY 24, 1877.

Went to New York (very wet)

RRT 40.

SUNDAY, FEBRUARY 28, 1877.

Laboratory work of the day.

MONDAY, FEBRUARY 29, 1877.

Went to New York today. P. M. 4:45.  
Went up to The Western Union with G. H. Stein.  
Am was introduced to Genl. Stager. Am & Greening  
the Genl. afterwards accompanied Stein and  
to West. Park where Edison showed him  
the paper. In talking over the royalty on  
the Foreign Electric pen we concluded that  
three dollars was enough and about right.

TUESDAY, FEBRUARY 27, 1877.

Went to New York and intended to start for  
Chicago at 1:30 p.m. but Edson forgot the coupons  
of R.R. ticket & could not go.  
Took supper with Ruff and Alice at Parkers  
Went to Olympic Theatre with Ruff & Edson &  
saw Samuel the Black R.R.T. 24 miles  
Left at 10:30 A.M. N.Y.

Wednesday Feb 27 1877  
McLaughlin & McNamee all night here  
Lil & Phoebe also day

WEDNESDAY, FEBRUARY 28, 1877.

Breakfast with Ruff & Edson at Rochester  
Got through ticket to Chicago via R.G.C. Grand  
Prunk Rd. Mid. cont. 100 - started at 11 AM.  
arrived in Albany at 4:20 PM.  
Went up to look at the new State house  
it is still unfinished but a very fine building  
Left Albany at 8:15 p.m. for Buffalo.  
R.R.T. 145 miles

Thursday Feb 28 1877  
Lil & Phoebe all day

THURSDAY, MARCH 1, 1877.

Arrived at Buffalo YAM TKT - 513 miles  
Breakfasted and took Grand Trunk & Port  
Huron.

Bridge over the Niagara River at East Buffalo  
is exceedingly fine.

Scenery all along the route is very mixed - some  
nothing but partially cleared woods. At Paris  
the view was very pretty, & lay at the bottom  
of a deep valley on the bank of a stream.

Arrived at Parma on the Canada side of the  
St. Clair River at 12:30 p.m.

R.R.T. 196 miles  
The St. Clair River is very beautiful and clear as  
crystal it is very rapid about 8 miles per hour.  
At this point the Grand Trunk Cars are ferried  
across by boats built especially for the purpose  
in London Ont.

Stayed at Pitt Edison's house at night -

Sunday March 1 1877

Mrs. Kinsey here all day.

Photograph & telephone all day  
Jen went to Philadelphia today.

FRIDAY, MARCH 2, 1877.

DE

Went over with Al & Spitz & learned to make  
arrangement about the control of the Horse & K  
Store. Edison said if he could get back the money  
that he put in there he would be satisfied. This  
proposal would have been taken immediately if  
Pitt had not suddenly remembered that he had  
put something into the road before Edison had  
taken the shares and he said he did not under-  
stand it that way. He then proposed that the  
Dymunston Bros should lend Edison \$500 for 2 years  
at 10 percent and in return Edison to give them note  
secured by Stock (or shares) which they were to hold &  
sell. But which Edison was to get the dividends on.  
Edison then left \$100 with them to pay his share  
of an assessment they were to make 1/4 of off all  
undelivered & commencing to pay dividends  
immediately.

Pitt Huron is a very pretty little place with  
about 10000 inhabitants. A good share, a  
handsome large part of it and Clinton house  
occupies a large territory.

Saturday March 2 1877

Charles Johnson & Co. with Harrison here today  
came to make arrangements about foreign patents  
for Photograph, Pucka, telegraph & take our  
foreign patents.

SATURDAY, MARCH 8, 1877.

Went up with Samuel Edison to see (Lass) I bought  
for Koda some time ago, it was very noisy and  
old. Also got it transferred there and  
left the deed with J. W. Edison. It got recorded  
Sept 25<sup>th</sup> 1875 for Chicago R.R.T. Co.

Sunday March 9, 1877

SUNDAY, MARCH 4, 1877.

Arrived in Chicago at 11 a.m. and put up  
at Remont house on Lake Street. In the after-  
noon I went to the Waterworks and also went  
up the tower and got a good view of the City.

MONDAY, MARCH 8, 1877.

Went to Martin's Elect. Mfg. Co. shop in the morning. met Alon, went with him to Paul Stager's office for an hour, through the H.O. St. office, for department.

Dined with Alon at Palmer's house.

Went to McPeters' Studio at night. Evening

R.P.T.

Went to see Wheeler 142 La Salle St.

TUESDAY, MARCH 13, 1877.

Martin Electric Ldg in morning.  
Bought jewelry ad for Alon.

Cham for Emma

Cham for Mary

2 P.M. for both

Got settlement of all accounts with H. Giffels  
and paid for our Foreign pen & date.

Alon dined with me at Tremont house

Lt Chicago at 8:15 p.m. Train in  
Hotel Crail for New York. Yes.

MONDAY, MARCH 5, 1877.

M

Went to Martin's Chest & Apples shop in the morning. met Alice, went with him to Gust Dager's office for an hour. Through the N.O. Tel. office, Fire department.

Dined with Alice at Palmer's House.

Went to McPeters' Theatre at night. Emma

R.R.T.

Went to see Wheeler 142 La Salle St

TUESDAY, MARCH 6, 1877

Martin Electric Shop in morning.  
Bought Jewelry set for Rosa.

Cham for Emma

Cham for Roy.

2 notes for both.

Got settlement of all account with McCaffrey

and paid for our Foreign fees to date.

Alice dined with me at Tremont House

Left Chicago at 8:15 pm. Train in

Hotel Crail for New York. Res.



WEDNESDAY, MARCH 7, 1877.

Breakfast Dinner & supper on train  
Arrived Pittsburgh 12 noon RPT. 461 mi.  
Scenery between Pittsburgh and Altoona very  
beautiful although still early in the year  
and on stage

Thursday March 7 1877  
Geo Holmes & wife came.  
Trunks got mailed by Harrington  
Express

THURSDAY, MARCH 8, 1877.

Arrived at Elizabeth at 6:31 A.M. 480 mi.  
Waited there till 7:30 and took train to  
Kew-Forest 10 mi.  
Went to Newark and deposited check and  
afterwards to New York 21 mi.

FRIDAY, MARCH 9, 1877

Laboratory all day, fixing up accounts  
of Penn. A. Pass all bills to Sherman, Adams  
and Gilchrist.

Left ~~Philadelphia~~ March 9 1877  
Got to ~~Wilmington~~ High-Castle. ~~Accompanied~~ got  
letter by ~~Confer~~ ~~Confer~~ ~~Confer~~  
Am home from Philadelphia today  
New Brunswick bridge burned down  
Telephone all day

SATURDAY, MARCH 10, 1877

New York. - No presses ready to ship.  
RR 5 40 miles

Total RR Travel this year  
- 2934 miles -

SUNDAY, MARCH 11, 1877.

Hunt test in blowing - in woods.

MONDAY, MARCH 12, 1877.

New York & day  
Adrian came home today at 9 A.M.  
Found out that there had been no plateau on  
any of the batteries sent out by W. Edgely &  
got 4 for center & 4 for hollows took out the  
pans & battery top & took to laboratory before  
R. P. T. 1st mile

Sunday March 12 1877  
Test out. Philadelphia by New York  
130 miles but very good - direct 89  
miles very fair. After we got through  
found out W. W. W. W. W. had been heading  
around & reached New York. Hunt took  
afterwards made a half or ten chapters  
& used spiral strings & press. Hunt  
kept getting better as we used higher  
presses & finally put on solid tube &  
got better articulation than on anything  
else

TUESDAY, MARCH 13, 1877.

Went to New York today. R.R. 46 min.  
 Moved from 41 Day St. to 28 New Canal St.  
 Sent 1 press to Philadelphia. Mr. Woodard  
 worked at night on Talking Telegraph & Home

Monday, Mar 13 1878

Good telephone test with Philadelphia  
 from Baumbell here  
 No James " } at night  
 McLaughlin

WEDNESDAY, MARCH 14, 1877.

Went to New York today. 40 min.  
 Sent 4 No. 1 press complete to Butler, Harman.  
 Edison has given books over the cutlines to M.O. Bell  
 put it up in Room 21 2<sup>nd</sup> floor.  
 Had News for me a few etc. for Henderson

Thursday, Mar 14 1878

Went to Philadelphia  
 Edison & New York  
 Working on Telephone & Phonograph

THURSDAY, MARCH 18, 1877.

Went to New York R.R. at.  
Custom at 44 W 16<sup>th</sup> bought some household furniture.  
Wrote on Talking Telegraph at night.

Friday Mch 18 1878  
Mr & Mrs Atkins went to New Brunswick.  
Wrote all day on Telephone & photographs.

FRIDAY, MARCH 16, 1877.

Went to New York R.R. at.  
Wrote at night on Talking Telegraph.  
Letter from Father as before.

Saturday March 16 1878

SATURDAY, MARCH 17, 1877.

N.E.

Went to New York

R.R.T. 40.

I was doubtful about the goods bought at auction  
on Thursday and wrote Lyell up to investigate.

We find everything O.K. - - - - -

Had Mr. Commission on Berlin from

SUNDAY, MARCH 18, 1877.

279

Worked all day on speaking telegraph

MONDAY, MARCH 19, 1877.

Went to New York today. Worked all night on talking telegraph. At 4 P.M. in New York and Jim and I at laboratory during the day they had a great many people here to show, Brewster, Brown, etc.

Thursday Mch 19 1878  
Jim sailed to Montreal for England

TUESDAY, MARCH 20, 1877.

Went to New York today. Worked all night on speaking telegraph. Saw myself and Jim at laboratory and Charles at N.O. office. put on steel wire diaphragm on Keweenaw.

Wednesday Mch 21 1878  
Rigley, Johnson, & Allen, here tonight. Philadelphia wants test tonight. Worked Frankly and put the blade a ball of it and we waited till 1 o'clock.

WEDNESDAY, MARCH 21, 1877.

F

Went to New York.

R.R.T. 44.

Brought South American directory  
traded on Ditzing telegraph (in order to get it  
ready for James & Palmer who are thinking of  
calling hotel of it) at N.Y. office room 29. with  
Edison & C.P. Allen

Home on 12 train

1st 0710 in town.

Samuel Edison arrived at  
Herald Park

Thursday Mch 21<sup>st</sup> 1878  
W. Barton here today  
Bliss here at night

THURSDAY, MARCH 22, 1877.

Went to New York

45 in

Edison moved from room 29 to room 121 Newway  
& Room 59 & 60 floor.

Edison signed contract with M. H. S. Co. by  
which he gets \$100 per week to help pay expenses of  
his experiments & they have the option of his telegraph  
is invention (except chemical automatic) & work on  
possibly as they shall decide  
Kraa went to Newark & bought some things  
at Smith's auction.



FRIDAY, MARCH 28, 1877.

Went to New York  
Roma went to Newark  
Worked all night on Linging telegraph machine  
a good solid receive with no displacement.

SATURDAY, MARCH 24, 1877.

Went to New York today. RPT: 45 m  
Took a bath at Courtlandt Street

1. *Neurospora crassa* is a filamentous fungus that grows on a wide range of organic substrates. It is a model organism for studying the genetics of development, metabolism, and cell biology.

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10. *Neurospora crassa* is a filamentous fungus that grows on a wide range of organic substrates. It is a model organism for studying the genetics of development, metabolism, and cell biology.

1000

SUNDAY, MARCH 25, 1877.

Worked in Laboratory and finished my speaking telegraph receiver made an iron disc also a few letters on.

Edison got a new theory in regard to magnets he thinks that if a single magnet will give magnetism at the end of two feet then put in more magnets & project as much farther on the principle I shall try it. He thinks also that as

the magnets field works like this magnet shown  and as Paragon says a long one magnet like this  showing it travels further than he thinks that a number of magnets placed like the first figure will give intensity. He also thinks that it follows the same law as the ridge for the.



MONDAY, MARCH 26, 1877.

Stayed in Kent Park  
Worked on Speaking telegraph got good reading thing  
A duplex plumbago points & a large battery from footers  
at both ends.

TUESDAY, MARCH 27, 1877.

Went to New York today

Left at 11:40 a.m. - N.Y.

Arrived at 1:30 p.m. - N.Y. - Took a walk in the park.

WEDNESDAY, MARCH 28, 1877.

Went to New York today took train to get out  
the New Zealand press.

Took over Edison. He accurate folks.  
Worked all night on talking alphabet

THURSDAY, MARCH 29, 1877

Went to New York. In sleep at all last night. 24a  
 Sent one Mr. P. & Gallen. [51]  
 England from (or) arrived today.

FRIDAY, MARCH 30, 1877

Went to New York today.  
 Worked all night at 191 Broadway on  
 Talking Telegraph and designing the embossed  
 Bacon got permission from B. for Murray to  
 make a few of them.  
 James & Holmes were up to see Telephone in  
 the afternoon but it did not work well.  
 During the evening we got excellent talking  
 all the 40 fellows could get it.

SATURDAY, MARCH 31, 1877.

Left all night on table at 191. Morning  
Hurray took away Embroidered & Sewed  
20. 11. 1877

SUNDAY, APRIL 1, 1877.

Monday April 1<sup>st</sup> 1877  
Went to Philadelphia to test and  
New York talked with paper case

MONDAY, APRIL 2, 1877.

New & New York

no mile

Worked on making telegraph at night this principle -



Studied Murray on business & manufacturing and manufacture six.

Visited Andrew to work round house at 12 per day.

Sunday April 2 1877

Went to Philadelphia to test with New York  
Shells came down also with the  
Magnet -  
Eden Bentley & many others amused  
over the work but could not get a single  
word over Shells.

TUESDAY, APRIL 3, 1877.

New & New York

45 miles

Called at Murray and took pattern of Entwistle.

Worked at night on my 4 tele machines.

As about 9 o'clock heard 'Telephone' working on  
N.Y. and N.Y. and put on multimeter on, got  
it beautiful 'loud roar of hummer'. Old folks at  
home 'do beautiful high note very clear, and  
altogether very good.

Murray had his on net at the laboratory and we got  
it very perfect on our Telephone! -

- Andrew working on house.

- Brought home Edison laboratory with two pen  
penet.

Took over model of 'hook print post power' pen  
(mechanical) & office. Model made by Stearns.

WEDNESDAY, APRIL 4, 1877.

New York today  
Played till 12 midnight and called 40 of the 60  
pens for England  
Got piping for front gutters  
Andrew working on house

THURSDAY, APRIL 5, 1877.

Went to New York today  
Saw at Bureau to letter Havana  
Brought remainder of England pens to Laboratory &  
made right, fixed them all.  
Riff at Laboratory & stayed all night at Edison

Friday, April 5, 1877  
Went to Domestic Tel. Co. to settle  
Up with Edison.

FRIDAY, APRIL 6, 1877

Went to New York today  
 Rear got lost at Laboratory and we caught him and  
 afterwards released him.

Saturday April 6, 1877

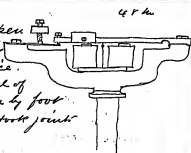
Paid Grod-Alley for suit against Edison  
 Went with Edison to A.P. & for Domestic  
 City.  
 Sent \$100 to L.F. Wilbur for Edison, by Express  
 under the name of G. Wilson 25 New Church St.

Talked with Professor Barker at University  
 of Pennsylvania for an hour.

SATURDAY, APRIL 7, 1877

Went to New York

Miner started on Reed pen  
 He was to make 2, one for him  
 and the other for Patent Office.  
 I sent up to Smith the model of  
 mechanical pen driven by foot  
 power & connected by Hook joint





SUNDAY, APRIL 8, 1877.

Worked on Speaker Telegraph

Monday Apr 1 1877  
Showered phone to Benbank Herland  
Judge Huntziff

MONDAY, APRIL 9, 1877.

Worked on Speaker for Speaking Telegraph

TUESDAY, APRIL 10, 1877.

Worked on Speaker for Speaking telegraph.

WEDNESDAY, APRIL 11, 1877.

Went to New York today

Took the Road from New York to New Jersey

Worked on Speaker telegraph at night

10 THURSDAY, APRIL 12, 1877.

Went to New York  
Met Maria at Newark in afternoon  
Worked at night on speaker & talking telegraph

105 FRIDAY, APRIL 13, 1877.

Laboratory all day working on Speaker Polygraph  
Had a telegram from New York in afternoon  
arranged the foreign mission and would leave  
New York with party next week.

SATURDAY, APRIL 14, 1877.

New York today  
Had a conversation with John, Edson & James about  
selling James some stock in the B.C. Mfg Co. we  
agreed to let him have for \$200,000 forty five hundred  
shares for (\$200) fifteen hundred dollars. he will make  
about it.

Order from Miami for (12) twelve pens complete.

Order from Switzerland for (12) ten pens complete.

Went to Wallack's theatre at night with Rosa and saw  
my awful dad!

Aunt Clara came to-day

SUNDAY, APRIL 15, 1877.

George Caldwell here today  
Aunt Clara here.

MONDAY, APRIL 16, 1877.

New York.

4 P. m.

Saw 5 complete pens at W. Marks + C.

Gilliland at Laboratory at night

Worked on 'Jungo' telegraph at night.

TUESDAY, APRIL 17, 1877.

New York

--- 4 P. m.

Worked at night on telegraph

WEDNESDAY, APRIL 18, 1877.

New York  
Worked on new transmitter for speaking telegraph.  
We found that the Electro-magnet principle applied  
to speaking telegraph made a much better

THURSDAY, APRIL 19, 1877.

Stayed at Laboratory all day.

FRIDAY, APRIL 20, 1877.

SATURDAY, APRIL 21, 1877.

Went to New York  
Called at Stewart to attend suit. Called V. Calum  
and put off for 1 week.  
Also arrived in New York he introduced me to Wm. H. Allen  
who dined with us and afterwards came out to Minto  
Park at night.  
Made my New England Album



SUNDAY, APRIL 22, 1877.

Home all day  
Laboratory at night. We made casts of the  
very successfully and before 2 A.M.

MONDAY, APRIL 23, 1877.

New York today  
Made contact with Foreign Pen  
Mr. Wilson, Director of Penn. H. N. at Laboratory  
night



TUESDAY, APRIL 24, 1877.

New York  
 Will Johnson, on his first day, <sup>at 12 o'clock</sup>  
 Adam Hatchels, & Adams signed contract  
 for Foreign Pen - <sup>in pen</sup>  
 Took on Reed Pen -

WEDNESDAY, APRIL 25, 1877.

New York  
 Attended Court in the Int. <sup>at 10 o'clock</sup>  
 against A & T & Co. Superior Court.  
 Holland & Adams signed Contract for  
 Foreign Pen manufacture and sale.  
 W. S. Johnson left for England - (Cunard)

THURSDAY, APRIL 26, 1877.

New York today

Attended case in the Quadruplex suit before  
on the stand -----

Also worked at Laboratory at night -----

FRIDAY, APRIL 27, 1877.

New York

Attended Court in Quadruplex suit

Stayed at night to get off American order of Rem

117 SATURDAY, APRIL 28, 1877.

New York.

Called at Humphreys coming back in New York. -

118 SUNDAY, APRIL 29, 1877.

All day at laboratory.

MONDAY, APRIL 30, 1877.

Laboratory all day on copying experiment.  
Edison came home at night and wanted  
a model made for hand-lamp and newspaper  
wrapper printer. I and Kreus' stayed all  
night we made him complete -

TUESDAY, MAY 1, 1877.

Laboratory all day on copying experiment

WEDNESDAY, MAY 3, 1877.

Went to New York 45.  
Took model of newspaper wrapper printer and  
hand stamp. 46.  
Went to Court (Quadruplex suit) Edison on the  
stand all day.  
Stayed at office till 12 midnight - sitting by the  
fire.

THURSDAY, MAY 3, 1877.

New York to day 47.  
Advised Court in Quadruplex suit Edison  
on stand.

124  
FRIDAY, MAY 4, 1877.

Went to  
Laboratory all day working in new compen-

125  
SATURDAY, MAY 5, 1877.

Went to Newark to attend Mrs. Gould's & Clara  
put off indefinitely 22 m  
Out hunting in afternoon with Jim. Killed 2 snakes  
1 small yellow & the other a black snake about  
5 ft 6 in long. Shot a bird and got a land turtle  
which I put in garden.

126  
SUNDAY, MAY 6, 1877.

Had a bump come on my face at the right  
side just below eye about one inch in diameter  
except a bit.

127  
MONDAY, MAY 7, 1877.

Worked all day on new composition in Laboratory

128  
TUESDAY, MAY 8, 1877.

New York.

<sup>see notes</sup>  
Edison & I went up to the Polygraph 89

Murray Street & saw the process of taking copies

129  
WEDNESDAY, MAY 9, 1877.

New York

<sup>at</sup>  
At night Dr. Van Wygenin & 3 other gentlemen  
came to Laboratory to see telephone. Wanted  
us to show it before the scientific society in  
Newark. made arrangements to Charley to show  
it for them



32 THURSDAY, MAY 10, 1877.

Laboratory all day.  
Left with Ford all afternoon.  
David of Detroit here in afternoon.  
Olson speaking to him about the  
dammer waterproofing and varnish.  
+ he agreed to go in 2 give half profit  
+ Oscar Johnson N.Y.C. + keep 1/2  
profit himself.

33 FRIDAY, MAY 11, 1877.

Laboratory  
Lewis working on varnish all day.  
Gave Mr. Butler and another gentleman  
from Princeton here today box  
Telephone.

SATURDAY, MAY 12, 1877.

New York today

Thief feeling bad, sick, & been cut up  
 had by Jackson, n. Quadruplex Col-  
 paid; Edison Johnson. Thief & I were  
 talking in his room about the pay-  
 ment of 17<sup>th</sup> Union mortgage on Edison  
 shop in July 1874. date July 31 (or about) 1874.  
 Thief stated he paid it all or very nearly  
 so. Edison thought not

At night at laboratory, we could not find  
 anything paid on mortgage except two  
 checks & receipts for about \$1000 or one  
 note.

SUNDAY, MAY 13, 1877.

Went to Newark today  
 Went to Murray to see if I could get any  
 receipt or note of money paid to George  
 on mortgage on Edison's shop. He has  
 none but the checks & money paid to the  
 first \$1000

54  
134  
MONDAY, MAY 14, 1877.

Laboratory all day  
Went over to Van Cleave place to make  
arrangements about ink —

237  
135  
TUESDAY, MAY 15, 1877.

Went to New York  
Met W. Kettle. Gave him all foreign  
European letters and my answers to them  
together with a short account of all  
sales made by us.

136  
136  
WEDNESDAY, MAY 16, 1877.

Laboratory all day.  
Edison went to see Ben Butler at night.

137  
137  
THURSDAY, MAY 17, 1877.

Mr. James & Mr. Thompson here to day.  
Edison not here. Spent the afternoon  
with Thompson talking on waterproofing paper  
barrels.

At 3 p.m. went to New York with them.  
Galewell and I went to Peck (my) first lecture  
on the Telephone at Chickering Hall. I had an  
opportunity to speak over the wire to New Brunswick  
but could not get it well. I think it is no  
better than our own.  
Galewell apparently got it very well but  
I could not. The keying was not anything as  
good as ours.

194  
195  
127  
FRIDAY, MAY 18, 1877

Mr. Pease, Director of Telegraphs in England  
& Mr. Ward, Supt. of British Cable here today  
had a splendid time. They were highly  
pleased and are coming again.  
Pease very much interested in 'pneumatic  
relay' also in large timing forks for short-  
tuning lines. Mr. Ward brought us our  
books of the Society of Telegraph Engineers.  
Worked on speaker at night.

329  
SATURDAY, MAY 19, 1877

Went to New East stopping at Newmarket 4 P.  
New place and view  
Went to race lecture on telephone at night in  
Chickering hall, 'it was very poor indeed.'  
Bought books, receipts.

SUNDAY, MAY 20, 1877.

Speaking telegraph all day.

MONDAY, MAY 21, 1877.

New York today.

Saw James who wanted to advance money to carry on the carbon experiments but I told him we could not take it on that way, if he put his money into the Company under the Company's advanced it would be all right.

Got ten boxes made at Jacob-Hey for Telephone.

TUESDAY, MAY 22, 1877.

Worked on taking telegraph all day.  
Got instruments ready for rehearsal of Concert  
at Newark.

WEDNESDAY, MAY 23, 1877.

Worked on New Speaker today.  
Went to Newark at night with Clara to  
the Newark Opera House to hear the Telephone  
the performance was about to be a fizzle but  
I and Jim forced it up.

THURSDAY, MAY 24, 1877.

Laboratory all day working on receiver  
for speaking telegraph —

FRIDAY, MAY 25, 1877.

New York today stopped at Newark &  
order box there for new instruments  
for Telephone for Caldwell.  
Got 6 large & 4 small pieces for Bally.



146 SATURDAY, MAY 26, 1877.

Went to New York.  
Got present for Bally and collected for  
same from Stock &c. 40

147 SUNDAY, MAY 27, 1877.

Sent Mail 5 1/2<sup>00</sup> (55<sup>00</sup>).  
Worked on Longing Telephone for Caldwell  
exhibition -

148 MONDAY, MAY 28, 1877.

Worked on Singing Instruments for  
Caldwell's Telephone Concerts—  
Prof. Eaton came in afternoon and I  
spent the afternoon with him on the  
spectroscopel ———

149 TUESDAY, MAY 29, 1877.

Worked all day on Caldwell's singing  
telephone instruments.  
Caldwell here in morning.  
Thompson of Newark here, wants  
a box for domestic Tel that can  
be put in a house & will notify  
central office when anybody inter-  
fers with windows or doors.  
Worked all night

WEDNESDAY, MAY 30, 1877.

Finished Sizing telephone  
 Charbon started for Reading with 9 boxes

THURSDAY, MAY 31, 1877.

Went to Newark with Rose & baby & have her  
 finger operated on by Dr. O'Gorman  
 afterwards to New York Met. Bros. there

152  
FRIDAY, JUNE 1, 1877

Home all day on Speaking Telegraph.  
Heavy put in place of C. F. Gilliland  
at 2d New Church to manage the  
'Pen' business

153  
SATURDAY, JUNE 2, 1877.

Went to New York  
Brought home a Wheatstone transmitter of  
which 2 and a punchy edition of from H. O. F. Co.  
C. F. Gilliland at Edison at West Park

154  
SUNDAY, JUNE 8, 1877.

Finished the speaking instrument large  
"Sapphagin" but found it of present a  
failure -

239  
MONDAY, JUNE 4, 1877.

Went to Newark with Rosa & baby to  
get her fingers splinted by Dr.  
O'Gorman.  
G. H. Bliss at laboratory at night  
I made contract for his taking  
duplicating Lark and Hibson shuon  
lage.

TUESDAY, JUNE 5, 1877.

Worked on Speaking telegraph all day  
 J. P. Keiff at laboratory at night stayed  
 all night at Edison's —

WEDNESDAY, JUNE 6, 1877.

Worked on Speaker today. we now got  
 it so that we consider it fit to be put  
 on a line and shall now proceed to  
 make 2 instruments alike & try it  
 on a circuit —

156 THURSDAY, JUNE 7, 1877.

*Worked on Speaking telegraph.*

157 FRIDAY, JUNE 8, 1877.

*Worked on Speaking telegraph.*

162 SATURDAY, JUNE 9, 1877.

Worked on Speaking telegraph

161 SUNDAY, JUNE 10, 1877.

Worked on Speaking telegraph  
Made relay for Copley & reduced a circuit  
through relay without opening it



162  
MONDAY, JUNE 11, 1877.

Speaking telegraph all day

163  
TUESDAY, JUNE 12, 1877.

Speaking telegraph all day  
C. S. Gililand here to see the condition of  
factory, for report to old man.

114  
WEDNESDAY, JUNE 13, 1877.

*Speaking telegraph all day and night.*

115  
THURSDAY, JUNE 14, 1877.

*Speaking telegraph all day and night.*

FRIDAY, JUNE 15, 1877.

Speaking telegraph all day and night.

SATURDAY, JUNE 16, 1877.

Worked on Speaking telegraph  
 Prof. Barker here today.  
 Ed. Freeman here today.  
 Finished model speaker.

166  
SUNDAY, JUNE 17, 1877.

Worked on different penumbag<sup>os</sup> for  
speaking telegraph all night.  
Found that the combination of  
Gumbag and Rubber also Gumbag  
and Cadette Magazine are all excellent  
as also many others.

167  
MONDAY, JUNE 18, 1877.

Went to New York —  
Coming back stopped in Newark and  
saw Murray about the Centauro. They  
will be ready for me soon —  
Worked all night on Speaking telegraph.

178  
TUESDAY, JUNE 19, 1877.

Worked in Laboratory all night on Speaking  
telegraph

177  
WEDNESDAY, JUNE 20, 1877.

Took the Squawen Luthernment for private  
line & blunays to make fork 32. m.

Went up to the Star gas machine, office  
& investigate Welder's machine —

172 THURSDAY, JUNE 21, 1877.

Went to Murray & Newark worked on designing the new speaking telegraph.

32

173 FRIDAY, JUNE 22, 1877.

Went to Newark & Murray's 32 m.  
Worked on designing new speaking telegraph.

174  
SATURDAY, JUNE 23, 1877.

Went to Murray's at Newark. 10 a.m.  
Worked on designing new speaking telegraph.  
Here

175  
SUNDAY, JUNE 24, 1877.

Went in woods with Rose & children  
Worked all night on talking telegraph

176  
MONDAY, JUNE 25, 1877.

Wrote Pierce here today. went at 3 p.m.  
worked all night on talking telegraph.

177  
TUESDAY, JUNE 26, 1877.

Went to Murray at Newart. 32 -  
worked on speaking telegraph all  
night.



WEDNESDAY, JUNE 27, 1877.

Went to Murray's with Edison & Co.  
 Worked on Speaking telegraph all night  
 Went from here to New York and got  
 the paper from Bennett

-16-

THURSDAY, JUNE 28, 1877.

Went to Newark & Murray's with Edison  
 Worked on Speaking telegraph all night

FRIDAY, JUNE 29, 1877.

Went to Neways at Newark N. J.<sup>32</sup>.  
 Worked at Speeding lithograph here as  
 also at home at night.  
 Deposited 2 of Edmunds Royalty Checks in  
 bank & gave him checks here for  
\$402.18.

SATURDAY, JUNE 30, 1877.

Stayed at home -  
 Sent check to G. G. Ward, 16 reward &  
 for my annual subscription to Soc  
 Ed Eng. Instn

SUNDAY, JULY 1, 1877

Out in woods with Rosa  
worked all night on Speaker Telegraph

MONDAY, JULY 2, 1877.

Went to Newark Sunday & sat. Emerson.  
Got Edison there at 6 p.m. & talked all afternoon.  
Edison went home. —  
Rosa in Newark with me —

TUESDAY, JULY 3, 1877.

Murray sent Boutwell to New York  
 I and Odier went to New York in order to  
 show two of them & freeze  
 Got me working all night and it was seen  
 by Brewster, Ostron, Stager, Livingstone, Van Horn  
 Hinchman, Hare, Fisher.  
 Found out considerable bugs amongst which the  
 connection were wrong.

WEDNESDAY, JULY 4, 1877.

At home  
 Mr & Mrs Baird and again came & spent the  
 night with us

186  
THURSDAY, JULY 6, 1877

W & W + Aggie Baud here today & went  
home at night.  
Went to New York & W & S & Co. & at-  
tended on passing embassies  
Staid at night to make 2 Talking  
Telegraph machines as often is in a  
hurry for them.

187  
FRIDAY, JULY 6, 1877

Went to Newark & got Carlings & ordered  
Base Stones for 2 Speaking Telegraphs 32-2

187  
SATURDAY, JULY 7, 1877.

Worked all day on Cotton 2 Speaking  
Telegraphs.

188  
SUNDAY, JULY 8, 1877.

Worked all day on Cotton two Speakers.

MONDAY, JULY 9, 1877.

Went to New York  
Called at Messrs. for Carney and Michel-  
Plating for Speaking telegraph  
Bought Lightning rods for my house  
but 24 large  
201 Small } sent to Henry

TUESDAY, JULY 10, 1877.

Finished drawings for Speaking telegraph  
for Murray  
Worked all night on Speaking tel.

WEDNESDAY, JULY 11, 1877.

Worked all day and night on speaking  
telegraph

THURSDAY, JULY 12, 1877.

Worked all night on Speaker Tel.



FRIDAY, JULY 13, 1877.

Went to Newark to Mumfords base about  
Speakers & take drawings.  
Deposited check \$42.50 at bank payable J. H. Thomas.

SATURDAY, JULY 14, 1877.

Worked on Speakers all day.

116 SUNDAY, JULY 15, 1877.

Worked all day and night on Speaking  
telegraph

117 MONDAY, JULY 16, 1877.

Went to Murray's at Newark in the  
afternoon  
Worked all night on Speaking -

TUESDAY, JULY 17, 1877.

Worked all day and night on Speaking  
Edigraph, got speaking perfect  
by a dance which would only an-  
swer to the 'H' & 'S'.

WEDNESDAY, JULY 18, 1877.

Worked all day in Speaker without  
going to bed at all.

THURSDAY, JULY 19, 1877.

Worked all day on Speaking Telegraph  
J.C. Kuff at Laboratory at night and  
stayed at Edison's house at night.

FRIDAY, JULY 20, 1877.

Worked all day and night on Speaking  
Telephone.

Sketch a new idea which promises  
to be O.T. Speak into one tube &  
at the same time across the tube of  
another machine thus the diaphragm  
on lower tube will only respond  
to the s, sh, k, p etc and  
the top one to the other sounds.



The principle of the bottom  
tube is like speaking across the mouth  
of a bottle.

202  
SATURDAY, JULY 21, 1877.

Prof Barker, Dr. Drake, and  
Mr Wallace here today. I left on 3  
p.m. train. Squaker telegraph  
worked beautifully.

203  
SUNDAY, JULY 22, 1877.

Worked all day and night on Squaker  
telegraph.

204  
MONDAY, JULY 23, 1877.

Worked all night on Speaking telegraph

205  
TUESDAY, JULY 24, 1877.

Worked all day on Speaking telegraph

206 WEDNESDAY, JULY 25, 1877.

Sent in bills: 151.62 Lwt  
 27.50 Message  
 29.61 Lwt to Berlin.

Worked on speaking telegraph all day and  
 night

207 THURSDAY, JULY 26, 1877.

Sent file for Ex. 1 Lwt. & Henry.  
 Worked on speaking telegraph today  
 and designed receiving instrument for  
 Price to show before the British Associa-  
 tion.

258  
FRIDAY, JULY 27, 1877.

Went to Newark & ordered boxes and got  
casting for Preece's telephone and after-  
wards went to New York and bought  
brass and steel for triphragms  
Stopped at Newark coming back -

41 min.  
Mr Ward Sept. Direct Cable at Laboratory  
with Mr Siemens today

259  
SATURDAY, JULY 28, 1877.

Worked all day on Telephone for Preece.



SUNDAY, JULY 29, 1877.

Worked all day and night on Shaker  
telegraph -

MONDAY, JULY 30, 1877.

Worked all day and night on Shaker  
telegraph. Got the articulation all  
perfect again by covering silk fibre  
with Plumbago and  
padding into a lump and  
placing between 2 duckings  
with spring on and putting  
disc on screw. Then we found to dele-  
cate that when you felt this in circuit  
with a galvanometer so:-  
and felt pressure on spring  
A so that it squeezes to the plumbago you  
can lessen the resistance as to turn the  
scale of galvanometer gently up and down  
the scale



TUESDAY, JULY 31, 1877.

Worked all night on Speaker telegraph

WEDNESDAY, AUGUST 1, 1877.

Worked on Speaker telegraph all  
day and night

THURSDAY, AUGUST 2, 1877.

Went to Newark & shipped by  
Austin Baldwin - the telephone  
to H. H. Price.

FRIDAY, AUGUST 3, 1877.

Worked all day on Speaking  
telegraph.  
Sent \$60 bill by Cha. Odier to deposit  
in bank it was not marked in  
book as the bank held it

24 SATURDAY, AUGUST 4, 1877.

J. B. A. David new early the morning  
to test the Telephone.

25 SUNDAY, AUGUST 5, 1877.

Worked all day on Speaker telegraph

MONDAY, AUGUST 8, 1877.

Worked all day on speaker telegraph.

TUESDAY, AUGUST 7, 1877.

Worked all day and night on speaking telegraph.

Got Place's machinery agency man here today & took over machinery with a view to selling.

WEDNESDAY, AUGUST 8, 1877.

Worked all day on Speaker Telegraph.

Mr Stewart of N. 24. St + 8 Ave New York  
maker of Singer sewing machines  
here to look at some machinery.

THURSDAY, AUGUST 9, 1877.

Worked on Speaking telegraph all day  
and night.

Mr Dwyer here experimenting.  
He thought it better to abandon the  
paper & consequently we receive it on  
a magnet this. I promised Edison I



would make him a  
full set for tomorrow  
to test his theory &

I started at 7 p.m. & worked all night.

FRIDAY, AUGUST 10, 1877.

Worked up till noon finishing 2 sets of  
Speaker telephone and Edison & I went  
to New York, met David and we got a  
line. Edison & David stopped at 197 Broadway  
and I went to clearing house and we made  
some <sup>more</sup> talking. It took some time before  
we had things all right. At Camp Kings  
got some messages from Edison & David  
& answered. Called at 'pen office'  
No sleep at all last night.

SATURDAY, AUGUST 11, 1877.

Worked on Speaker Telegraph.  
Making different kinds of apparatus.  
Man here from Stewart. His yard and  
bought old Gould lathe No 0 -

22  
SUNDAY, AUGUST 12, 1877.

Made models for Speaker's on handles  
to take up and place to ear or mouth.

23  
MONDAY, AUGUST 13, 1877.

Went to Newark N.J.  
Got Carting for 2 pair Speaker.  
Ordered woodwork for same  
Called in Newark's.

52-



TUESDAY, AUGUST 14, 1877.

*Speaking telegraph all day*

WEDNESDAY, AUGUST 15, 1877.

*Speaking telegraph all day*

224 THURSDAY, AUGUST 16, 1877

Went to New York and was gave testimony  
before senate in inquiries of  
Frueman and Edison  
Stewart and Edison on Electric  
pen.  
Went to Jacob May and got wood work  
for speaker.

225 FRIDAY, AUGUST 17, 1877

Worked all day on Speaking telegraph  
Man came & put up gas machine

SATURDAY, AUGUST 18, 1877.

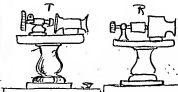
All day on Speaking telegraph  
 Man started putting in gas mask

SUNDAY, AUGUST 19, 1877.

Worked all day on Speaking telegraph  
 And all night  
 Found out that by putting a piece  
 of rubber on the diaphragm for  
 receiving it dampened it and  
 did away apparently with the  
 harmonics or extra sounds -

MONDAY, AUGUST 20, 1877.

Finished at 5 A.M. the first 2 pairs of  
Speaking telegraphs and took them  
to New York and then  
them to Mr. O'Brien.



Put them up below  
Prescotts room 39 &  
Mr. Daniels room in  
194 Broadway. They

worked a little weaker than at home.  
Brought them home and worked all  
night trying fluffs etc.  
Now bed early this night

TUESDAY, AUGUST 21, 1877.

~~Took them~~ New York today and tried  
a little more on same circuit.  
brought them home and worked all  
night on trying new fluffs etc.

WEDNESDAY, AUGUST 22, 1877.

Took speakers over to New York again  
and put them on Durants line Sugar  
beet between Pearl + wall & Q 25 that  
Jim went to Q 25 St & I to Pearl, I got  
him very good but there was so much  
noise at his end that it was impossible  
for him to get all I said. We left them  
there.

THURSDAY, AUGUST 23, 1877.

Wired speaker telegraph & worked  
all night. found good receiver  
was plain magnet on cylinder  
with piece of tin band on top so



FRIDAY, AUGUST 24, 1877.

from both air receiver to new York & went to C. 25<sup>th</sup> St & I went to Hall St. After considerable time I got him well but he could only get me occasionally. Brought all instruments home & latter. Drew out plan at night for new transmitter & sender is



Receiver a magnet on side handle with plate of tin on cores loose & prevented from falling off by small piece on edge of the thing that are held loose by staples in edge of wood

~~Receiver~~ made so that connections are made in machine proper and flexible cord passes through the handle, if you want to adjust take off shell & slip handle along cord. Gas started in Laboratory tonight

SATURDAY, AUGUST 25, 1877.

Started to make two transmitters & receiver on new plan.

Gas started in Robert Watson Jr from Montreal came down to see Edison about the introduction of speaking telegraph in Canada. Gas machine man and plumber finished in Laboratory.

SUNDAY, AUGUST 26, 1877.

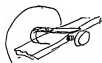
Went to Florida Grove with Rose Aunt Sam  
& kids. good time.

MONDAY, AUGUST 27, 1877.

Worked all day on speaking telegraph  
new pattern.

236  
TUESDAY, AUGUST 28, 1877.

Went to New York with Speakers.  
told them in 194 Boring. brought them  
back at night and put in new stuff for  
that 5 times as much stuff as before.



237  
WEDNESDAY, AUGUST 29, 1877.

Saw the Speakers all day.



THURSDAY, AUGUST 30, 1877

Went to New York and put on 2 speakers  
on between 194 Broadway and 110 East Street  
worked very well. I was at East Street and  
spoke with O'Brien, Scherck, and many others  
with Bell's instruments in we could get  
nothing.

FRIDAY, AUGUST 31, 1877

Ordered in 2 new instruments with  
flat handles for speaking telegraph

SATURDAY, SEPTEMBER 1, 1877.

Worked all day on New Speaking telegraph.  
 Watson came this afternoon and away  
 at 6<sup>30</sup> pm.  
 Went down to old man Gilliland's shop.  
 & found 2 1/2 pane glass broken & some  
 pieces worth him suggesting putting  
 of board.

SUNDAY, SEPTEMBER 2, 1877.

Finished new Speaking instruments with  
 flat handles, success.  
 Tried experiment with Johnson at Saratoga  
 from laboratory but he could get nothing  
 on his microphone from either fluff or  
 solid plantain.



A Times reporter called  
 at night to see the  
 Speaking telegraph.

296  
MONDAY, SEPTEMBER 3, 1877.

Went to New York adjusted instrument  
at South Street put on new units &  
found them work a little louder al-  
though there is only 3 ohms in the  
transmission.

Went to different Electrotypers to see if  
we could find anybody that would  
metalize our fibre but could not.

Worked at night trying metalization  
of fibre.

Walter of New York tried speaking  
telegraphs today.

Wren started on 6 pair of speakers.  
telegraphs

297  
TUESDAY, SEPTEMBER 4, 1877.

Worked all day on metalizing fibre  
for speaking telegraph.

287  
WEDNESDAY, SEPTEMBER 5, 1877.

Went to New York and put telephone  
speakers on Sutton and Townsend  
lives. Stave men I went to their  
yard at foot of 4<sup>th</sup> St East river  
and had man turn 4<sup>th</sup> St over to  
their office in Beavor Street.  
Worked pretty well and left them  
here.

J.C. Huff here to night

Mr Badger here this morning.

289  
THURSDAY, SEPTEMBER 6, 1877.

Went to New York and sent Jim to  
Brauer street end of Sutton & E line.  
It was very wet but speaker worked  
very well indeed left new instrument  
at 4<sup>th</sup> Street and brought home the  
speaker that has caused trouble.  
Made some phosphide of Calcium  
at night and reduced the silver  
on silk saturated by nitrate of  
silver by placing it above the  
Calcium phosphide which is damp-  
ened. This reduces almost instant-  
ly, but I do not work well in  
speaking telephone by reason of  
fumes made by the nitric acid  
(being left in the silk) when affected  
by Battery current.

FRIDAY, SEPTEMBER 7, 1877.

Gen. B. Scott here today  
 Worked all day here on Speaker  
 telephone

SATURDAY, SEPTEMBER 8, 1877.

Worked all day on Bells for Speaking  
 telegraph  
 Adams went to New York and called  
 to see telephone

SUNDAY, SEPTEMBER 9, 1877.

All day on Speaker & Belles for our  
new Grand Telephone

MONDAY, SEPTEMBER 10, 1877.

Went to New York  
Attended and gave evidence in  
H's interference with Edison on  
Hart Stamp (Sut was killed, pad on  
Shelton sheet)  
Called on Speaker, but he could not go  
with us. Faking?  
Jen called and saw Speaker telephone  
on Sutton St. 9<sup>th</sup> line

TUESDAY, SEPTEMBER 11, 1877.

Took a skooner at Woodbridge for fishing  
banks and got down to Sandy Hook  
at 4 p.m. Very little wind.  
Went ashore at the waste lighthouse  
and walked across to the other  
anchored for night in the bay  
close to the steamship. Landing  
Jim and I rowed off to the eastern  
and got Mr James of New York  
party consisting of Edison Jim myself  
and Geo Curran.

WEDNESDAY, SEPTEMBER 12, 1877.

Started out at 6 in the morning for  
the banks (very little wind) got  
there by 4 p.m. caught some  
Sea bass and porge and anchored  
for the night off Seabright.

THURSDAY, SEPTEMBER 13, 1877.

Fished a little this morning and  
started home at 8 AM.  
arriving at Perth Amboy at 6:30 p.m.  
Fished in ocean in 60 feet water  
50 fms.  
Left Perth Amboy on Central Road  
at 7:34 pm to Elizabeth + caught  
8:25 pm from W. G. on Pennsylvania R.R.

FRIDAY, SEPTEMBER 14, 1877.

Went to Newark + deposited checks -  
Sent Mutual Life Ins. of New York checks  
for \$225.00  
Hamilton St. Badger here all day  
C. H. Johnson here all day.



254  
SATURDAY, SEPTEMBER 18, 1877.

Worked on bells for Speaker telephone  
Mason left this morning  
Gen. H. Bates here at night & left 9 PM  
He said they had sold 151 machines  
during the first four months on Foreign  
Pen.  
Edison gave Badger option 6 months on  
Speaker telegraph for Canada & pay  
complete for \$10000 gold

255  
SUNDAY, SEPTEMBER 19, 1877.

280  
MONDAY, SEPTEMBER 17, 1877.

Went to New York with telephone.  
Fixed up Sutton and Townsend's line afterwards.  
put a pair on East Street line with call  
bells etc. Stager, Gray. Also many others  
and so on.  
Also gave Murray order for 100 sets at \$11-  
of Edison Telephone  
Gray & Edison at laboratory at night went  
away at 9 p.m. had supper at my house

281  
TUESDAY, SEPTEMBER 18, 1877.

Went to Murray all day.  
Edison at laboratory at night & stayed at  
Edison's house.  
Talking over matters relative to Gen. &  
Telephone till 2 A.M.  
Edison said if Edison & Holland would pay  
patents in France Germany Austria  
Belgium Italy he would give him 5% of  
what he sold & if anywhere in only three  
countries & same in any other country he  
paid patents for  
Edison wanted 21 days to hear from Holland & get it

26  
WEDNESDAY, SEPTEMBER 19, 1877.

New-York today  
Made out *Gompho* bill for Edison

27  
THURSDAY, SEPTEMBER 20, 1877.

Went to New York  
Ran at laboratory at night and stopped  
at Edison House.  
I was in Murray all afternoon.  
Made sketches at night of *Rotary* press for  
German patent  
Letter from David saying telephone did not  
work right.

FRIDAY, SEPTEMBER 21, 1877.

Went to New York Newark

SATURDAY, SEPTEMBER 22, 1877.

Went to New York  
Got letters for Miami  
Back Newark & called at Murray's

266  
SUNDAY, SEPTEMBER 23, 1877.

Worked all day and night on Speaking  
telephone fluffs.  
Made many machines for fluffs.  
Made stamping press for fluffs.

267  
MONDAY, SEPTEMBER 24, 1877.

Worked all day & night on fluffs.  
Miss here tonight went at 9 P.M.  
Made fluffholder with Kang.  
Got talking through the ham-  
mitten.

TUESDAY, SEPTEMBER 26, 1877.

Mr Van Bunt & man here from  
the Geo Place Machinery Agency.

WEDNESDAY, SEPTEMBER 26, 1877.

Went to New York  
Dr Hux & Mr Field here from California  
they say the European patents for  
the Bell Telephone & get 1/4 out of  
them 1/5.

THURSDAY, SEPTEMBER 27, 1877.

Went to New York  
Bought James' Battery for Telephone.

FRIDAY, SEPTEMBER 28, 1877.

Took over 4 Station of Speaking  
telephone to Dr. Kelly of California  
at Windsor Hotel New York  
Put up James' Telephone at 7c. B. B. B. B.

127  
2  
SATURDAY, SEPTEMBER 29, 1877.

Delivered 2 Bells (one) to Dr. Hays on  
Steamship Britannia New York.  
Worked on James' telephone at 42 Bowoy  
last. When Rose found there was some  
trouble. Edison afterwards went  
to Gold Street & found that the one  
we last took would not work.  
He came home & worked all night  
& found that the mica diaphragm  
was very sensitive to heat. Put in  
brass one & also one made from a  
linotype twice as thick.  
Brass one articulation perfect. Iron one  
not quite so good but more permanent  
not being affected by heat like the  
brass. The mica being worse by about  
three than brass.

223  
SUNDAY, SEPTEMBER 30, 1877.

Worked on speaking telephone.  
No Red all night.  
New principle speaking again. Graph.  
that had fluff between it & a spring.





MONDAY, OCTOBER 1, 1877.

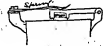
Worked all day on Speaking telephone.  
Also all

TUESDAY, OCTOBER 2, 1877.

Worked all day and night on Speaking  
telephone.  
Made one to work by all the  
parts being put in the diaphragm.  
Went to New York and got James  
+ 1 pair from Henry.

WEDNESDAY, OCTOBER 3, 1877.

Went to New York. And put telephone  
on South Street and one each side  
the river like this, the first  
worked best



THURSDAY, OCTOBER 4, 1877.

Worked all day on speaking telegraph  
Man from Purvis of Providence to set about  
quitting his

FRIDAY, OCTOBER 5, 1877

Worked all day on Speaking telegraph  
tonight.  
Sketches rubber behind mica diaph.  
\* dampen & take away harmonics

SATURDAY, OCTOBER 6, 1877

Worked all day on Speaker &  
at night

SUNDAY, OCTOBER 7, 1877.

Went to Patterson with Rosa & Emma

MONDAY, OCTOBER 8, 1877.

Edison left for West to bring his  
wife home.  
Andrews man here I gave him  
information he required.

TUESDAY, OCTOBER 9, 1877.

Went to Minnaps to make alterations on  
matt

WEDNESDAY, OCTOBER 10, 1877.

Went to Minnaps. at Newark. and afterwards  
to New York  
Johnson came here at night. and stayed  
with me all night

THURSDAY, OCTOBER 11, 1877.

Worked all day on speaking telephone  
Edison home at night  
Johnson at Lathrop all day went to N.Y.  
at night

FRIDAY, OCTOBER 12, 1877.

Went to New York + got Bell Station  
Cord + starting for Western telephone  
Johnson here all day slept at Edison

SATURDAY, OCTOBER 13, 1877.

Went to Murray's in morning to get  
an '86 tape.  
Afterwards worked on parts for telephones.  
My bad cold in head went to bed early.

SUNDAY, OCTOBER 14, 1877.

Worked all day and night on  
Speakers.

MONDAY, OCTOBER 15, 1877.

Took Telephone to New York and  
Wiley and I got some good talking  
over the Long<sup>Is</sup> wire

TUESDAY, OCTOBER 16, 1877.

Went to New York with Rosa & Ade.  
Had their picture taken at Clara's.



26  
WEDNESDAY, OCTOBER 17, 1877.

Took a pair of telephones to James  
of Broadway and set them up for  
him.

27  
THURSDAY, OCTOBER 18, 1877.

Worked all day and night on speaking  
telephones.

FRIDAY, OCTOBER 19, 1877

Worked all day and night in  
speaking telephones

SATURDAY, OCTOBER 20, 1877

~~Worked~~ Worked all day in speaking  
telephones

294  
SUNDAY, OCTOBER 21, 1877.

Worked all day and night on speaking  
telephone.

295  
MONDAY, OCTOBER 22, 1877.

Worked all day and night on speaking  
telephone.

Edison started out on solid plumbago  
discs and combination of plumbago  
& rubber.

I made a picture for filing & polishing  
the discs exactly to thickness.


Went to New York at night for Bore and  
got material for whitewashing house.

TUESDAY, OCTOBER 23, 1877.

Worked all day and night on speaking  
telephones.

WEDNESDAY, OCTOBER 24, 1877.

Took over 2 telephones with slightly new  
principles worked tolerably  
well on Court St circuit -


 Circuit  
Battery  
Magnet  
Reed  
Solenoid  
Bell

Worked all night.

THURSDAY, OCTOBER 25, 1877.

Took over new telephone & put in circuit  
between Meyer and the two rooms  
and Meyer, Stager, & others said it was  
equal to Bell's.

FRIDAY, OCTOBER 26, 1877.

Worked all day on Speaking telephones  
& late at night  
Made 4 solid cylinders of Lamp black  
and rubber much more delicate than  
Plumbago & rubber

SATURDAY, OCTOBER 27, 1877.

Speaking telephone all day.  
Prof Barker & another gentleman at  
Laboratory at night.

SUNDAY, OCTOBER 28, 1877.

Worked on Speaking telegraph.  
Rose & I went to woods in afternoon & got some  
autumn leaves for her.

MONDAY, OCTOBER 29, 1877.

Went to Murray's with Edman & Thuesi  
Had Murray make alterations on telephone  
Went to New York and got butter, rice,  
tuba & shoe gum, Platina etc for aditah

TUESDAY, OCTOBER 30, 1877.

Went to Newark & deposit. Gilliland took  
a bank for collection afterward sent  
it myself.  
Worked on machine for pressing lamp  
Hark and rubber.

WEDNESDAY, OCTOBER 31, 1877.

Worked all day on machine for  
pressing lamp black and rubber.

THURSDAY, NOVEMBER 1, 1877.

Worked all day on Speaking telegraph.



308  
FRIDAY, NOVEMBER 2, 1877.

Worked all day on Speaking telegraph.

309  
SATURDAY, NOVEMBER 3, 1877.

Worked all day on speaking telegraph.

SUNDAY, NOVEMBER 4, 1877.

Worked all day on speaking telegraph

MONDAY, NOVEMBER 5, 1877.

Worked all day on speaking telegraph

TUESDAY, NOVEMBER 6, 1877.

All day on telephone speaking  
No night work—

WEDNESDAY, NOVEMBER 7, 1877.

Worked all day on Speaking telephone  
Made



work well

as



No night work

Also made water tightness  
diaphragm pressed and  
closed a slot through which  
two cells with electrodes  
were connected together—

THURSDAY, NOVEMBER 8, 1877.

Worked all day on Speaking telephon  
In night work.

FRIDAY, NOVEMBER 9, 1877.

Worked all day on Speaking telegraph  
Johnson here at night - No night work.

217  
SATURDAY, NOVEMBER 10, 1877.

Worked all day on speaking telegraph

218  
SUNDAY, NOVEMBER 11, 1877.

Worked all day on speaking telegraph

MONDAY, NOVEMBER 12, 1877.

Worked all day on speaking telegraph.

TUESDAY, NOVEMBER 13, 1877.

Worked all day on speaking telegraph.

WEDNESDAY, NOVEMBER 14, 1877.

Worked all day on speaking telephone.

THURSDAY, NOVEMBER 15, 1877.

Worked on speaking telephone all day.  
McKenzie came tonight  
Made telephone work knife edge on chisel  
strikes a series of springs as that every  
spring would feel in more recent work.

FRIDAY, NOVEMBER 16, 1877.

Worked on speaking telegraph all day.  
McKenzie went away this morning after  
testing on water telephone saying it  
was far better than Bell's.  
Mr James and Mr McKelvey of New York  
here at night.

SATURDAY, NOVEMBER 17, 1877.

Worked on speaking telephone all day.  
Sent 2 rose apples to New York & myself.  
McKenzie here tonight.



SUNDAY, NOVEMBER 18, 1877.

Speaking telegraph  
McKenzie here all day brought 2 Bell  
telephones & tested out

MONDAY, NOVEMBER 19, 1877.

Went to New York with Rosa lunched  
at Vienna Bakery.

TUESDAY, NOVEMBER 20, 1877.

All day on speaking telegraph.  
Mr. Wheeler came to New York to take charge  
of Eastern Agency of pen.

WEDNESDAY, NOVEMBER 21, 1877.

All day on speaking telegraph.

THURSDAY, NOVEMBER 22, 1877.

All day on speaking telegraph.  
 Reef at bottom at night.

FRIDAY, NOVEMBER 23, 1877.

All day on speaking telegraph.  
 H<sup>o</sup> King is here at in evening.

SATURDAY, NOVEMBER 24, 1877.

Went to New York. Shipped 2 Hk apples to mother.  
Took models & specifications to house of  
first water telephone and Gering's work  
presented in



*Stephen*

SUNDAY, NOVEMBER 25, 1877.

Speaking telegraph all day.

MONDAY, NOVEMBER 26, 1877.

Speaking telegraph all day

TUESDAY, NOVEMBER 27, 1877.

Went to N.Y. with Edison to settle an  
interference on Quadruplex between  
Baker, Sigsbee, & Nickerson. but Nickerson's  
lawyer from Washington wanted a set-  
tlement, which was granted.  
Called on G. Place Machinery Agency  
but in morning two hours before breakfast.

WEDNESDAY, NOVEMBER 28, 1877.

Worked on Speaking telephone all day

THURSDAY, NOVEMBER 29, 1877.

Thanksgiving & wet all day  
Worked on Speaking telephone in afternoon

FRIDAY, NOVEMBER 30, 1877.

Worked on speaking telephone all day.

SATURDAY, DECEMBER 1, 1877.

All day on speaking telegraph

SUNDAY, DECEMBER 2, 1877.

Worked all day on Speaking telegraph  
Made induction coil for telephone

MONDAY, DECEMBER 3, 1877.

Worked all day on Speaking telephone —  
finished induction coil & tested it



TUESDAY, DECEMBER 4, 1877.

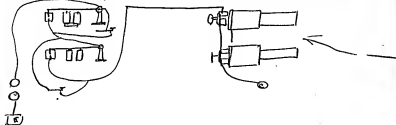
Wm. made Phonograph today  
worked on Speaking Tel.

WEDNESDAY, DECEMBER 5, 1877.

Worked all day on Speaking Tel.

THURSDAY, DECEMBER 6, 1877.

Finished the Phonograph  
Made notes for P.O.

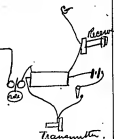


FRIDAY, DECEMBER 7, 1877.

Went to New York today.  
Tried telephone on 23<sup>rd</sup> St line  
worked much better than before

Took Phonograph to  
Scientific American —

Took Model of h-level



Went to New York & test telephone

Went out in woods in morning & got 2 Rabbits.

MONDAY, DECEMBER 10, 1877.

Went to New York, & tested telephone in Phelps shop.

TUESDAY, DECEMBER 11, 1877.

Started to make 6 transmitting telephones  
of acid battery.  
Went hunting in morning shot 1 rabbit.

346  
WEDNESDAY, DECEMBER 12, 1877.

Worked all day on 6 Telephone Hammett

347  
THURSDAY, DECEMBER 13, 1877.

Worked all day on 6 Telephone Hammett.  
Hungarian No. — here tonight

↑  
Pushes, Theodore (see page 360)

94  
94  
FRIDAY, DECEMBER 14, 1877.

Worked all day on telephone house.  
Mr. Sand here in afternoon.

97  
SATURDAY, DECEMBER 15, 1877.

SUNDAY, DECEMBER 16, 1877.

Count from New York <sup>Spencer</sup> here drove here  
tandem.

Bliss came at night.  
Worked all day in telephones (C)

MONDAY, DECEMBER 17, 1877.

Finished two telephone speakers  
for David  
H. Bliss here at night

TUESDAY, DECEMBER 18, 1877.

Telephone all day.

WEDNESDAY, DECEMBER 19, 1877.

Telephone all day.



THURSDAY, DECEMBER 20, 1877.

*Telephone all day*

FRIDAY, DECEMBER 21, 1877.

*Telephone all day*

356  
SATURDAY, DECEMBER 22, 1877.

Worked on telephone all day.  
Johnson & W. Roosevelt here today.

357  
SUNDAY, DECEMBER 23, 1877.

Worked on telephone all day


MONDAY, DECEMBER 24, 1877.

Worked on telephone all day.

TUESDAY, DECEMBER 25, 1877.

Went hunting with Rine & John Gode

WEDNESDAY, DECEMBER 26, 1877.

Worked on telephones all day.  
Finished new receiver  with mouth.

Mr. Perkins here today got Phonograph  
over telephone to New Brunswick.

THURSDAY, DECEMBER 27, 1877.

Worked on telephones all day.  
Miss here at night.

Johnson, Painter & Gardner husband here  
today.          wanted Cohen & sent him  
contract with N. O. Tel. Co.

36.2  
FRIDAY, DECEMBER 28, 1877.

Worked on telephones all day.  
Bliss here this morning.

36.3  
SATURDAY, DECEMBER 29, 1877.

Spent day telephoning all day.  
Johnson & Painter here today.

SUNDAY, DECEMBER 30, 1877.

Speaking telephone all day

MONDAY, DECEMBER 31, 1877.

Speaking telephone all day  
Wrote my phonograph & showed to John

Charles Batchelor Journal, Cat. 1343

This journal covers the period January 1-December 22, 1883 and contains entries by Batchelor about his business and personal affairs, including his activities as Edison's personal representative in Paris. There are also clippings in English and French, among them a letter from Sherburne B. Eaton to the New York World about the Brush-Swan Electric Light Co. and a circular by the United Telephone Company regarding the infringement of Edison's telephone patents in the United Kingdom. Among the individuals and companies mentioned are Gulseppl Colombo, Edward H. Johnson, the Compagnie Continentale Edison, the Societe Electrique Edison, and the Societe Industrielle et Commerciale Edison. The book contains 185 pages numbered by an archivist. The front cover is stamped "Agenda 1883."

Blank pages not filmed: 31-32, 63-70, 73-74, 93-94, 121-122, 149-152, 155-156, 165-170, 175-178, 181-185.





## JANVIER

3. MERCREDI, Sainte Geneviève.

3-363

Pari

4. JEUDI, Saint Rigobert.

4-362

PariBaily left for Berlin on  
German Express

## JANVIER

5. VENDREDI, Sainte Émilienne.

5-361

PariPropr. L'Grand Huis and  
at Factory

6. SAMEDI, ÉPIPHANIE.

6-360

Pari

## JANVIER

7. DIMANCHE. Saint Théodore.

7-869

Paris

8. LUNDI. Saint Lucien.

8-358

Paris

## JANVIER

9. MARDI. Saint Julien. (N. L.)

9-357

Paris*Lgt for Berlin with M. Page  
8 p.m.*

10. MERCREDI. Saint Paul, ormite.

10-356

Berlin*Arrived 9 p.m. at Berlin.  
Hanserhof Hotel.*

# JANVIER

11. JEUDI. Sainte Hortense.

11—350

Berlin Meeting at Landau. in Morning  
" " Remains in P.M., with  
M. Sauty and Volger.

12. VENDREDI. Saint Arcade.

12—354

Berlin

# JANVIER

13. SAMEDI. Baptême de N. S.

13—353

Berlin

Visited Academy installation  
in Museum  
" place for station for Leipzig,  
two theaters —

Dined with M. Juge at M. Fiedler's.  
New Year's day. He went  
with me to the installation  
and on Higher Altman —

14. DIMANCHE. Saint Hilairo.

14—352

Berlin

Left at 9 p.m. for Paris.

## JANVIER

15. LUNDI. Saint Maur.

15-351

Mrs*arrived at 8 p.m. in Paris*

16. MARDI. Saint Guillaume (P. Q.). 16

352

Mrs

## JANVIER

17. MERCREDI. Saint Antoine.

17-349

Mrs

18. JEUDI. Chaire de S. Pierre.

18-348

Mrs*Interview with Han and Philippe  
relative to Lybrius Opera*

# JANVIER

19. VENDREDI. Saint Sulpice.

19-347

*Paris*

*At Fabrique commenced to keep man in  
pump room to find out what is cause of  
such leakage in pump there -  
Breakage in carbon at the point about 26 p.s.  
Possible causes -  
1. Too heavy cut in mouth of jet -  
2. Chemical inside due to capillary attraction  
in plating bath  
3. Too much weight in carbonisation*

20. SAMEDI. Saint Sébastien.

20-346

*Paris*

*Got some oil in Mercury pump at factory  
and got to take down all pipes*

# JANVIER

21. DIM. Sainte Agnès. Septuagésime. 21-345

*Paris*

22. LUNDI. Saint Vincent.

22-344

*Paris*

*Accident at Factory Little station boy fell  
that lighted the shop at factory near dynamo  
Mould for carbons. — like this made  
and commenced  
to make them in bits — Regular 16 pounds  
carbon taken*

## JANVIER

*Paris*

23. MARDI, Saint Ildefonso. (P. L.). 23-343

24. MERCREDI, Saint Babylos.

24-342

## JANVIER

25. JEUDI, Conversa. do S. Paul. 25-341

26. VENDREDI, Sainio Paulo.

26-340

*Paris*

*At Conseil Continental unanimously agreed  
Have had made a good business char. talking  
Le Opus at Paris*

## JANVIER

27. SAMEDI. Sainte Angélique. 27-339

Paris.

Spent at Box Masche. Our night  
and go-jelt together very good

28. DIM. Saint Charlemagne. Scargés. 28-338

Paris.

## JANVIER

29. LUNDI. S. François de Sales. 29-337

Paris.

Meeting of Council of Levee Industrielle  
Today. Levee Levee Levee Levee Levee  
Hearings on new Levee plant. No go clear  
Meet and Levee Levee for evening of car.

Ball of Levee Levee Levee Levee Levee  
at night

30. MARDI. Sainte Savine. 30-338

Paris.

Japanese minister at Levee Levee Levee Levee Levee

## JANVIER

31. MER. Sainte Marcolle. (D. Q.).

31-335

*Paris*

## FÉVRIER

1. JEUDI. Saint Ignace.

32-334

*Paris*

## FÉVRIER

INDIAN ELECTRIC LIGHT COMPANY.

PAID UP CAPITAL, \$100,000.

COP. GRAMME MACHINES have been

selected by the U.S. Army and Navy for use in the

WOLFEVILLE, Pa., and have received the highest

AWARD at the Philadelphia

Electric Machines for 15 horsepower lamps..... \$1,000

Do. for 1000 lamps of 1000 candles each..... 1,000

Do. for 500 lamps of 1000 candles each..... 1,000

Do. for 250 lamps of 1000 candles each..... 1,000

Do. for 125 lamps of 1000 candles each..... 1,000

Do. for 62 1/2 lamps of 1000 candles each..... 1,000

Do. for 31 1/4 lamps of 1000 candles each..... 1,000

Do. for 15 1/2 lamps of 1000 candles each..... 1,000

Do. for 7 1/2 lamps of 1000 candles each..... 1,000

Do. for 3 1/4 lamps of 1000 candles each..... 1,000

Do. for 1 1/2 lamps of 1000 candles each..... 1,000

Do. for 3/4 lamp of 1000 candles each..... 1,000

Do. for 1/2 lamp of 1000 candles each..... 1,000

Do. for 1/4 lamp of 1000 candles each..... 1,000

Do. for 1/8 lamp of 1000 candles each..... 1,000

Do. for 1/16 lamp of 1000 candles each..... 1,000

Do. for 1/32 lamp of 1000 candles each..... 1,000

Do. for 1/64 lamp of 1000 candles each..... 1,000

Do. for 1/128 lamp of 1000 candles each..... 1,000

Do. for 1/256 lamp of 1000 candles each..... 1,000

Do. for 1/512 lamp of 1000 candles each..... 1,000

Do. for 1/1024 lamp of 1000 candles each..... 1,000

Do. for 1/2048 lamp of 1000 candles each..... 1,000

Do. for 1/4096 lamp of 1000 candles each..... 1,000

Do. for 1/8192 lamp of 1000 candles each..... 1,000

Do. for 1/16384 lamp of 1000 candles each..... 1,000

Do. for 1/32768 lamp of 1000 candles each..... 1,000

Do. for 1/65536 lamp of 1000 candles each..... 1,000

Do. for 1/131072 lamp of 1000 candles each..... 1,000

Do. for 1/262144 lamp of 1000 candles each..... 1,000

Do. for 1/524288 lamp of 1000 candles each..... 1,000

Do. for 1/1048576 lamp of 1000 candles each..... 1,000

Do. for 1/2097152 lamp of 1000 candles each..... 1,000

Do. for 1/4194304 lamp of 1000 candles each..... 1,000

Do. for 1/8388608 lamp of 1000 candles each..... 1,000

Do. for 1/16777216 lamp of 1000 candles each..... 1,000

Do. for 1/33554432 lamp of 1000 candles each..... 1,000

Do. for 1/67108864 lamp of 1000 candles each..... 1,000

Do. for 1/134217728 lamp of 1000 candles each..... 1,000

Do. for 1/268435456 lamp of 1000 candles each..... 1,000

Do. for 1/536870912 lamp of 1000 candles each..... 1,000

Do. for 1/1073741824 lamp of 1000 candles each..... 1,000

Do. for 1/2147483648 lamp of 1000 candles each..... 1,000

Do. for 1/4294967296 lamp of 1000 candles each..... 1,000

Do. for 1/8589934592 lamp of 1000 candles each..... 1,000

Do. for 1/17179869184 lamp of 1000 candles each..... 1,000

Do. for 1/34359738368 lamp of 1000 candles each..... 1,000

Do. for 1/68719476736 lamp of 1000 candles each..... 1,000

Do. for 1/137438953472 lamp of 1000 candles each..... 1,000

Do. for 1/274877906944 lamp of 1000 candles each..... 1,000

Do. for 1/549755813888 lamp of 1000 candles each..... 1,000

Do. for 1/1099511627776 lamp of 1000 candles each..... 1,000

Do. for 1/2199023255552 lamp of 1000 candles each..... 1,000

Do. for 1/4398046511104 lamp of 1000 candles each..... 1,000

Do. for 1/8796093022208 lamp of 1000 candles each..... 1,000

Do. for 1/17592186044416 lamp of 1000 candles each..... 1,000

Do. for 1/35184372088832 lamp of 1000 candles each..... 1,000

Do. for 1/70368744177664 lamp of 1000 candles each..... 1,000

Do. for 1/140737488355328 lamp of 1000 candles each..... 1,000

Do. for 1/281474976710656 lamp of 1000 candles each..... 1,000

Do. for 1/562949953421312 lamp of 1000 candles each..... 1,000

Do. for 1/1125899906842624 lamp of 1000 candles each..... 1,000

Do. for 1/2251799813685248 lamp of 1000 candles each..... 1,000

Do. for 1/4503599627370496 lamp of 1000 candles each..... 1,000

Do. for 1/9007199254740992 lamp of 1000 candles each..... 1,000

Do. for 1/18014398509481984 lamp of 1000 candles each..... 1,000

Do. for 1/36028797018963968 lamp of 1000 candles each..... 1,000

Do. for 1/72057594037927936 lamp of 1000 candles each..... 1,000

Do. for 1/144115188075855872 lamp of 1000 candles each..... 1,000

Do. for 1/288230376151711744 lamp of 1000 candles each..... 1,000

Do. for 1/576460752303423488 lamp of 1000 candles each..... 1,000

Do. for 1/1152921504606846976 lamp of 1000 candles each..... 1,000

Do. for 1/2305843009213693952 lamp of 1000 candles each..... 1,000

Do. for 1/4611686018427387904 lamp of 1000 candles each..... 1,000

Do. for 1/9223372036854775808 lamp of 1000 candles each..... 1,000

Do. for 1/18446744073709551616 lamp of 1000 candles each..... 1,000

Do. for 1/36893488147419103232 lamp of 1000 candles each..... 1,000

Do. for 1/73786976294838206464 lamp of 1000 candles each..... 1,000

Do. for 1/147573952589676412928 lamp of 1000 candles each..... 1,000

Do. for 1/295147905179352825856 lamp of 1000 candles each..... 1,000

Do. for 1/590295810358705651712 lamp of 1000 candles each..... 1,000

Do. for 1/1180591620717411303424 lamp of 1000 candles each..... 1,000

Do. for 1/2361183241434822606848 lamp of 1000 candles each..... 1,000

Do. for 1/4722366482869645213696 lamp of 1000 candles each..... 1,000

Do. for 1/9444732965739290427392 lamp of 1000 candles each..... 1,000

Do. for 1/18889465931478580854784 lamp of 1000 candles each..... 1,000

Do. for 1/37778931862957161709568 lamp of 1000 candles each..... 1,000

Do. for 1/75557863725914323419136 lamp of 1000 candles each..... 1,000

Do. for 1/151115727451828646838272 lamp of 1000 candles each..... 1,000

Do. for 1/302231454903657293676544 lamp of 1000 candles each..... 1,000

Do. for 1/604462909807314587353088 lamp of 1000 candles each..... 1,000

Do. for 1/1208925819614629174706176 lamp of 1000 candles each..... 1,000

Do. for 1/2417851639229258349412352 lamp of 1000 candles each..... 1,000

Do. for 1/4835703278458516698824704 lamp of 1000 candles each..... 1,000

Do. for 1/9671406556917033397649408 lamp of 1000 candles each..... 1,000

Do. for 1/19342813113834066795298816 lamp of 1000 candles each..... 1,000

Do. for 1/38685626227668133590597632 lamp of 1000 candles each..... 1,000

Do. for 1/77371252455336267181195264 lamp of 1000 candles each..... 1,000

Do. for 1/154742504910672534362390528 lamp of 1000 candles each..... 1,000

Do. for 1/309485009821345068724781056 lamp of 1000 candles each..... 1,000

Do. for 1/618970019642690137449562112 lamp of 1000 candles each..... 1,000

Do. for 1/1237940039285380274899124224 lamp of 1000 candles each..... 1,000

Do. for 1/2475880078570760549798248448 lamp of 1000 candles each..... 1,000

Do. for 1/4951760157141521099596496896 lamp of 1000 candles each..... 1,000

Do. for 1/9903520314283042199192993792 lamp of 1000 candles each..... 1,000

Do. for 1/19807040628566084398385987584 lamp of 1000 candles each..... 1,000

Do. for 1/39614081257132168796771975168 lamp of 1000 candles each..... 1,000

Do. for 1/79228162514264337593543950336 lamp of 1000 candles each..... 1,000

Do. for 1/158456325028528675187087900672 lamp of 1000 candles each..... 1,000

Do. for 1/316912650057057350374175801344 lamp of 1000 candles each..... 1,000

Do. for 1/633825300114114700748351602688 lamp of 1000 candles each..... 1,000

Do. for 1/1267650600228229401496703205376 lamp of 1000 candles each..... 1,000

Do. for 1/2535301200456458802993406410752 lamp of 1000 candles each..... 1,000

Do. for 1/5070602400912917605986812821504 lamp of 1000 candles each..... 1,000

Do. for 1/10141204801825835211973625643008 lamp of 1000 candles each..... 1,000

Do. for 1/20282409603651670423947251286016 lamp of 1000 candles each..... 1,000

Do. for 1/40564819207303340847894502572032 lamp of 1000 candles each..... 1,000

Do. for 1/81129638414606681695789005144064 lamp of 1000 candles each..... 1,000

Do. for 1/162259276829213363391578010288128 lamp of 1000 candles each..... 1,000

Do. for 1/324518553658426726783156020576256 lamp of 1000 candles each..... 1,000

Do. for 1/649037107316853453566312041152512 lamp of 1000 candles each..... 1,000

Do. for 1/1298074214633706907132624082305024 lamp of 1000 candles each..... 1,000

Do. for 1/2596148429267413814265248164610048 lamp of 1000 candles each..... 1,000

Do. for 1/5192296858534827628530496329220096 lamp of 1000 candles each..... 1,000

Do. for 1/10384593717069655257060992658440192 lamp of 1000 candles each..... 1,000

Do. for 1/20769187434139310514121985316880384 lamp of 1000 candles each..... 1,000

Do. for 1/41538374868278621028243970633760768 lamp of 1000 candles each..... 1,000

Do. for 1/83076749736557242056487941267521536 lamp of 1000 candles each..... 1,000

Do. for 1/166153499473114484112975882535043072 lamp of 1000 candles each..... 1,000

Do. for 1/332306998946228968225951765070086144 lamp of 1000 candles each..... 1,000

Do. for 1/664613997892457936451903530140172288 lamp of 1000 candles each..... 1,000

Do. for 1/1329227995784915872903807060280344576 lamp of 1000 candles each..... 1,000

Do. for 1/2658455991569831745807614120560689152 lamp of 1000 candles each..... 1,000

Do. for 1/5316911983139663491615228241121378304 lamp of 1000 candles each..... 1,000

Do. for 1/10633823966279326983230456482242756608 lamp of 1000 candles each..... 1,000

Do. for 1/21267647932558653966460912964485513216 lamp of 1000 candles each..... 1,000

Do. for 1/42535295865117307932921825928971026432 lamp of 1000 candles each..... 1,000

Do. for 1/85070591730234615865843651857942052864 lamp of 1000 candles each..... 1,000

Do. for 1/170141183460469231731687303715884105728 lamp of 1000 candles each..... 1,000

Do. for 1/340282366920938463463374607431768211456 lamp of 1000 candles each..... 1,000

Do. for 1/680564733841876926926749214863536422912 lamp of 1000 candles each..... 1,000

Do. for 1/1361129467683753853853498429727072845824 lamp of 1000 candles each..... 1,000

Do. for 1/2722258935367507707706996859454145691648 lamp of 1000 candles each..... 1,000

Do. for 1/5444517870735015415413993718908291383296 lamp of 1000 candles each..... 1,000

Do. for 1/10889035741470030830827987437816582766592 lamp of 1000 candles each..... 1,000

Do. for 1/21778071482940061661655974875633165533184 lamp of 1000 candles each..... 1,000

Do. for 1/43556142965880123323311949751266331066368 lamp of 1000 candles each..... 1,000

Do. for 1/87112285931760246646623899502532662132736 lamp of 1000 candles each..... 1,000

Do. for 1/174224571863520493293247799005065324265472 lamp of 1000 candles each..... 1,000

Do. for 1/348449143727040986586495598010130648530944 lamp of 1000 candles each..... 1,000

Do. for 1/696898287454081973172991196020261297061888 lamp of 1000 candles each..... 1,000

Do. for 1/1393796574908163946345982392040522594123776 lamp of 1000 candles each..... 1,000

Do. for 1/2787593149816327892691964784081045188247552 lamp of 1000 candles each..... 1,000

Do. for 1/5575186299632655785383929568162090376495104 lamp of 1000 candles each..... 1,000

Do. for 1/11150372599265311570767859136324180752990208 lamp of 1000 candles each..... 1,000

Do. for 1/22300745198530623141535718272648361505980416 lamp of 1000 candles each..... 1,000

Do. for 1/44601490397061246283071436545296723011960832 lamp of 1000 candles each..... 1,000

Do. for 1/89202980794122492566142873090593446023921664 lamp of 1000 candles each..... 1,000



## FÉVRIER

4. DIM. Saint Gilbert. Quinquagésime. 36—331

5. LUNDI. Sainte Agathe. 36—330

## FÉVRIER

6. MARDI. S. Amand, év. Mardi-Gras. 37—339

Mrs

Received Founders share Société Electrique  
 5000 from Banque Centrale  
 " " " Société Industrielle  
 5000 from Banque Centrale  
 Delivered 500 Electrique to Leon -  
 " 750 Industrielle to Leon -

7. MERCRI. S. Romuald. Cendres. (N.L.). 38—328

Mrs

Just Co. Ind and Société Electrique's  
 founders share by Note Tapis & Co.  
 to Major Bataillon. Return  
 back has to be given to Richard Hardy

FE

*Paris*

8. JEUDI. Saint Jean.

*Charles of Austria  
Prace to al Tol*

...quelques-uns d'entre eux ont été  
...Schon...  
...au Palais impérial...  
...le grand...  
...ment déclaré un moyen du système Ed-  
...tion...  
...étant sous les raports...  
...1857

Edison à la cour d'Autriche.  
Une dépêche de Vienne annonce qu'un  
bal de la cour a eu lieu le mardi gras et  
que, comme au bal précédent, la grande  
salle de la Burg était éclairée au moyen  
de 500 lampes Edison. Les reines de la  
lumière électrique dans les ornaux des  
lustres produisaient un effet magique.  
Leurs Majestés étaient enchantées et  
ont hautement témoigné toute leur sa-  
tisfaction.  
Figure: 8 Feb. 1877

*Paris*

9. VENDREDI. Sainte Apolline.

40—326

FÉVRIER

*Paris*

10. SAMEDI. Sainte Scholastique.

41—325

*Paris*

11. DIM. Saint Séverin, Quadragesime. 42—324

FE

supplémentaire pour les journaux qui ne se sont pas abonnés au supplément et qui ont été envoyés en vertu de la loi du 17 mars 1897.

*Paris*

8. JEUDI. Saint Jean, martyr.

39—327

*Order of Aurora  
Bread & at Fabrique*

Edison à la cour d'Autriche.  
Une dépêche de Vienne annonce qu'un bal de la cour a eu lieu le mardi, que, comme au bal précédent, la grande salle de la Burg était éclairée au moyen de 500 lampes Edison. Les reflets de la lumière électrique dans les cristallins des lustres produisaient un effet magique. Leurs Majestés étaient enchantées et ont hautement félicité toute leur satisfaction.  
Figure: 8 Feb. 1883

*Paris*

9. VENDREDI. Sainte Apolline.

40—326

FÉVRIER

*Paris*

10. SAMEDI. Sainte Scholastique.

41—325

*Paris*

11. DIM. Saint Sôverin. Quadragésime. 42—324

# FÉVRIER

12. LUNDI. Sainte Eulalie.

43-323

13. MARDI. Saint Léon.

44-322

# FÉVRIER

14. MERC. S. Valentin. Q. T. (P. Q.). 45-321

*Hawville*

*San Loofle installation*

15. JEUDI. Sainte Georgina.

46-320

*Racecarat*

*Lft Racecarat for Perome - 6:15 am.  
near morning -*

## FÉVRIER

16. VENDREDI, Saint Elie.

47-319

*Reçu  
Raney  
Paris**Mrs. Foul pour invitation at  
Reçu and afterwards Lucie  
at Raney. —**Mrs.*

17. SAMEDI, Saint Théodulo.

48-318

*Daily Telegraph.**Two gentlemen of Christ Church  
at table today with Hodge  
Kah, Kistals & Fournier. —*

## FÉVRIER

18. DIM. Saint Siméon. Reminiscence. 49-317

*Mrs.*

19. LUNDI, Saint Gabin.

50-316

## FÉVRIER

20. MARDI. Saint Eucher.

51-315

21. MERCREDI. Saint Félix.

52-314

## FÉVRIER

22. JEUDI. Sainte Isabelle. (P. L.)

53-313

23. VENDREDI. Saint Milburge.

54-312

Paris Meeting of Continental Council of Women.

## FÉVRIER

Paris

24. SAMEDI. S. Mathias.

35-311

*Commenced to make new brickholder*  
301-Paris

25. DIMANCHE. Saint Victor. Ocult.

36-310

## FÉVRIER

Paris

26. LUNDI. Saint Nestor.

37-309

*Left for Berlin 8 p.m.*Berlin

27. MARDI. Sainte Honorine.

38-308

## MARS

4. DIMANCHE. Saint Casimir. Lefevre. 63—808

*Berlin*

5. LUNDI. S. Adrien.

64—302

## MARS

6. MARDI. Sainte Colette.

65—301

*Mrs**Arrived Paris 7<sup>h</sup> am.**Mrs*

7. MERCREDI. S. Thomas d'Aquin. 66—300

*went with Capt. J. K.**Office  
Fabrique  
Chapelorgan.**Eden Theatre at night*



## MARS

8. JEUDI. Saint Jean D.

67-299

*Brussels**Arrived noon + went  
Theatre du Parc L'Establissement*

9. VENDREDI. Ste Francoise. (N.L.)

68-298

*London**Arrived London 10 p.m.*

## MARS

10. SAMEDI. Saint Blanchard.

69-297

*London**See. Water Station. installation  
Hobson Restaurant  
" " Radnor installation  
Aquarium installation  
Navy Theatre.*

11. DIMANCHE. S. Firmin. Passion.

70-296

*London*





## MARS

Paris.

16. VENDREDI. Saint Cyriaque.

75-291

Paris

17. SAMEDI. Sainte Gertrude

76-290

## MARS

Paris.

18. DIM. Saint Alexandre. RAMEAUX. 77-289

Paris

19. LUNDI. S. Joseph.

78-288

Kau, St. Ros. & Savard went behind  
 scenes at Opera & Eden Theatre & worked  
 for manifestation: -

## MARS

20. MARDI. Saint Joschim.

79—287

21. MERCREDI. Saint Benoît.

80—286

## MARS

22. JEUDI. Sainte Epaphrodite.

81—285

*Mars**Mars*

23. Vendredi-Saint: S. Victorien. (P.L.). 82—284

*Mars, J. No 187. V. C. de Dijon à  
Nîmes après la messe de 9 heures.*



## MARS

24. SAMEDI: Saint Simdon.

83-283

Mie

Edt J., Mr Edt J., Mrs Cde  
Rosa + P. died at Regum  
7 afterwards went to Paris.

25. DIM. PAQUES. ANNONGIATION.

84-282

## MARS

26. LUNDI. S. Ludgor.

85-281

Mie

Opera + single Edt. Mr. Edt. Mrs Cde  
Mrs P., myself, + children

||The Panama canal scheme of M. de Lesseps is no longer a visionary undertaking. The projector himself and his strongest American supporter, Mr. Nathan Appleton, of Boston, have been supervising the work in person, and report the prospects as very encouraging, although several troublesome breaks have occurred. In addition to the naive labor many good workmen have been brought to the isthmus, and the best kinds of modern machinery for dredging is being shipped. Much of the distrust in the enterprise which has been felt, especially by the people of the isthmus, is said to have been dispelled by the vigor with which the work is being pushed. The contract for dredging and constructing seven miles of the canal is being undertaken by Mr. L. Austin Spalding, of Lockport, New York, for a consideration of \$8,000,000 per mile.

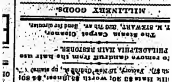
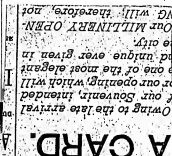
Starchaden Mch 27 1873

27. MARDI. Saint Rupert.

86-280

Mie

Made 17 lamps ordinary 16 c. tallow  
without jamming current during time  
on pump. Put one to 20 candles  
after pushing at 11 A.M. and it began  
to diminish slowly after one hour. Adjust  
it at 20 candles by next morning and it  
broke at 4.30 p.m. being 8.30 left.



## MARS

Mars-

28. MERCREDI. Saint Gontran.

87-279

29. JEUDI. Saint Frisque.

88-278

## MARS

Mars-

30. VENDREDI. Saint Pastoureo.

89-277

Expenses on Stock:-

	Debited	Aded
£ B. L. Co.	£200	£12
£ Co for I. L.	171	125
£ I. Co. I. L.	50	60
£ B. L. of B. L. Co.	112 1/2	—

31. SAMEDI. Sainte Bulbine. (D. Q.). 90-276

Hare

Went Hare with Steamway & see the  
Electric Light on the 'Normandie' at the  
sunderment put in by General of London

Stocks:-

Edison Electric Light Co. 1/2 1/2 asked	£25 Ad
" Co for Electric Light 155 "	125 "
" Illuminating Co. 1/2 80 "	60 "
" Best Light of Europe (Lund) 42.50 "	30 "



## AVRIL

1. DIM. Sainte Valérie. Quasimodo. 91-275

*Paris*

2. LUNDI. S. François de Paul. 92-274

*Paris*

## AVRIL

3. MARDI. Saint Richard. 93-273

*Paris*  
*Sign**Lft Paris for Sign to sign base of house  
for Charles Cotton*

4. MERCREDI. Saint Ambroise. 94-272

*Sign**Spent day with Brancin de Lunan  
Super + friendly in measuring  
+ making out on station*Gas - Habitants 56,000

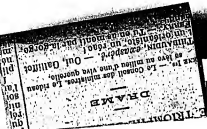
Prix de gaz 25¢

Water 50¢ per an 1 cu. per jour

Coal Best 25¢ per ton

Good 18 " " Salicord





Dijon

## 5. JEUDI. Saint Protgent.

95-271

Fixed Age of horse  
 Fixed theatre & get necessary  
 information for plants.  
 Light about 650. - Theatre  
 Rampes 32. Seats 128 } Auditorium  
 1 Horse 15 Seats 40  
 14 " - 30-120 Orchestra 24  
 14 Chorus 2. 28 Floor 126  
 Potable 20 Chorus 24  
 3 Gallies 30  
 Notes room 60  
 Regulation 4 ordinary gas cocks  
 Expense about 30 F per night

## 6. VENDREDI. Saint C  lestin.

96-270

Dijon

Statistics Gas.

Rue de Gas: public 30¢  
 town 20¢  
 Coal 15¢ per ton  
 Water

Theatre about 800 light 940  
 Dressing rooms 30 135  
 1 Horse 16 40  
 " " 20 60  
 " " 24 144 60  
 Rampes 80 60  
 10 Chorus 5 = 50 20  
 340 40  
 450

## AVRIL

## 7. SAMEDI. Saint C  loaire. (N. L.) 97-269

Dijon

Theatre 1-

It makes 218 representation of 6 hours  
 each in a year.  
 On stage they show red, white and blue,  
 but the whole lamps are included in the  
 number —

Depot measured off this for tubing etc etc

## 8. DIMANCHE. Saint E  dore.

98-268

Dijon

## AVRIL

9. LUNDI. Saint Eudes.

99—267

Paris

10. MARDI. Saint Fulbert.

100—266

Paris.

## AVRIL

11. MERCREDI. Saint Léon.

101—265

Paris

2. JÉUDI. Saint Jules.

102-264

Paris.

## AVRIL

*Paris.*

13. VENDREDI. Saint Justin.

103-263

*Paris.*

14. SAMEDI. Saint Tiburce. (P. Q.). 104-262

## AVRIL

*Paris.*

15. DIMANCHE. Saint Paterno.

*Ante anned —*

105-261

*Paris.*

16. LUNDI. S. Lambert.

10-260

# AVRIL

Paris.

17. MARDI. Saint Anicet.

107-259

Paris

18. MERCREDI. Saint Parfait.

108-258

# AVRIL

19. JEUDI. Saint Timon.

109-257

Paris  
London

Left Paris with No. 21 J. for London arriving 10.30 pm

London  
Liverpool

20. VENDREDI. Saint Marcolin.

110-258

Spent day with C.H. in London

Introduced to Col. Lancel.

## AVRIL

*Shipal.*  
*Bound for*  
*Harford.*

21. SAMEDI. Saint Anselme. 111-255  
 Left Liverpool on S.S. Savia for New York.  
 Lou, Maida, + Harriet saw me off

*at Sea*

22. DIM. Saint Théodore. (P. L.). 112-254  
 Arrived within 1/2 hr Quenstown at  
 Met Mr. Williams (of Foley) on board -  
 Met Mr. Pidgeon

## AVRIL

*At Sea*

23. LUNDI. Saint Georges.

113-253

*At Sea*

24. MARDI. Saint Léger.

114-252

# AVRIL

25. MERCREDI. Saint Marc.

115—251

26. JEUDI. Sainte Espérance.

116—250

# AVRIL

27. VENDREDI. Saint Anastase.

117—249

28. SAMEDI. Saint Vital.

118—248

*Two same very fine watermarks of passed on the  
edge of one*



## AVRIL

29. DIMANCHE. Saint Robert.

119—247

*New York.*

30. LUNDI. Ste Eutrope. Regat. (D.Q.). 120—246

*Arrived in Bay at 2 a.m.  
 Landed at dock midday.  
 Rided Central Station at night  
 with Adam —*

## MAI

1. MARDI. S. Phil. et S. Jacques. 121—245

*Newark. Lamp factory at East Newark.*

*New York.*

2. MERCREDI. Saint Anasthase. 122—244

THE  
 UNITED TELEPHONE COMPANY (LIMITED),  
 AND THE  
 LONG-DISTANCE TELEPHONE COMPANY (Limited).

The Directors of the UNITED TELEPHONE COMPANY (Limited), Herby Give Notice that they have been advised that the HOPKINS' TELEPHONE is an INFRINGEMENT of the PATENTS granted in 1875 and 1877 for the well-known EDISON TRANSMITTER and BELL MAGNETO RECEIVER, owned by the UNITED TELEPHONE COMPANY (Limited). PROCEEDINGS will be TAKEN against any PERSON MANUFACTURING, SUPPLYING, or USING the HOPKINS' TELEPHONE in ANY PART of the UNITED KINGDOM.

By order of the Board,  
 JAMES BRAND, Chairman.

Dated this 2nd day of May, 1883.

## MAI

19 SAMEDI Saint Yves.

139-227

Transit  
to  
Sea*Left New York in Sonnet of Bremen  
Line for Southampton**Saw Edison new meter work today  
perfectly**Edison & I worked a lathe with his small  
motor so that Bergman could not  
diminish it after by hand turning*At  
Sea

20. DIM. THURSDAY S. Bernard.

140-226

## MAI

21. LUNDI. Saint Hospice.

141-225

At Sea

22. MARDI. Saint Emile. (P. L.).

142-224

At Sea

## M A I

27. 'DIMANCHE. Saint Hildevert. 147—: 19

28. LUNDI. S. Gormain.

148—218

## MAI

20. MARDI. Saint Maximin. (D. Q.) . 149—217

1907-8  
 1908-9

30. MERCREDI. Saint Félix.

150-26

Southampton  
London

Arrived at Southampton 3 AM  
Left for London at 6.50  
Met Johnson & Bailey

# MAI

*London*

31. JEUDI. O. F. D. S<sup>t</sup> Pétronille. 151-215

*Met Bailey and Johnson all day; left  
with Bailey at night for Paris*

# JUIN

*Paris*

1. VENDREDI. Saint Pamphile. 152-214

*Arrived 6 A.M.*

# JUIN

*Paris*

2. SAMEDI. Saint Potin. 153-213

*Paris*

3. DIMANCHE. Sainte Clotilde. 154-212

*Went to the Grand Prix  
Party consisted of myself, Rosa,  
Mrs A. H. Johnson and Miss Cole*

## JUN

Paris

4. LUNDI Saint Quirin.

155-214

Paris

5. MARDI Saint Bonifacio. (N. L.) 156-210

## JUN

6. MERCREDI. Saint Claude.

157-209

~~London~~~~London~~Paris~~Arrived at 2 pm. Left for London at 6 pm.  
Next morning and afternoon.~~LondonParis

7. JEUDI. Saint Havenne.

158-208

~~Left sailing for London at 10 am  
and left sail sailing for Paris at  
night~~

## JUN

8. VENDREDI. S. Médard. 159-207

Paris -

~~Amused to see~~  
~~Interview took~~ - ~~Rem at his house~~  
 at night

Hippe quite sick inflammation of  
 bowels.

9. SAMEDI. Sainte Pélagie. 160-208

Paris -

Called Byer give more time  
 to Ammengaund & prepare file -

Rec'd Cases 62 and 63 & sent to Ammengaund  
 62. New Nielsen - Patent  
 63. Distribution - Addition

Made devis for Ben Marche 2000 light  
 " " " 5000 "  
 " " " 5000 & outside  
 5000 the outside 5000 having 3, 4 & 5  
 hour average - He showed a  
 supplementary dividend of 5% of  
 3 hour. 2 1/2 %  
 4 " 3 1/2 %  
 5 " 3 9/10 %

## JUN

10. DIMANCHE. Saint Landri. 161-205

Paris -

~~Hobbeson Patent~~ - ~~Watt Bailey~~ in  
 London an opinion on these -

Commenced working on Series for  
 Central Station from Rue Bas du  
 Rampart.

11. LUNDI. Saint Barabé. 162-204

162-204

## JUN

12. MARDI. Sainte Olympo. (P. Q.). 163—203

Paris

13. MERCREDI. S. Antoine de Padoue. 64—202

Went to see Forest Engine - *broken*  
 2870 turns - *Exceedingly heavy but*  
*good disposition being upright -*  
*has workmanship*

## JUN

14. JEUDI. Saint Rufin.

165—201

Paris

*Count du Moncel + wife at usine*

*Rec'd check 7,706 frs in administration  
 of Societe Industrielle et Commerciale  
 Bohem*

15. VENDREDI. S. Modeste.

166—200

# JUIN

16. SAMEDI. Saint Pargau. 167-169

*Mrs.*

*Meadows have only 6 eggs on day*

*25th 1st 2nd 3rd 4th 5th 6th*

17. DIMANCHE. Saint Avit. 168-169

*Mrs.*

*Johnsons' family all dined at the  
Cafe Lefroy*

# JUIN

18. LUNDI. Sainte Marine. 169-170

*Mrs.*

*Johnson, P. & Co. Goddard  
Breakfasted together*

*All at M<sup>r</sup> Aume's table at night*

*Attended annual meeting of Craft Union*

*Tell Edwin, Berthe Chetysse, &  
Berthe Lefroyville & Annemarie Lefroy*

19. MARDI. S. Gervais, S. Protais. 170-171



## JUN

20. MERCREDI. Saint Silvere. (P.L.) 171-195

*Paris*

24. JEUDI. Saint Loufroi.

173-194

*Paris*

## JUN

22. VENDREDI. Saint Paulin.

173-193

*Paris*

23. SAMEDI. Saint Andre.

174-192

*Paris**Ch. Goddard at factory -*

## JUN

Paris

24. DIMANCHE, Nativ. de S. J. Bapt. 175-191

Made lamps to show in Swan V.  
Edison gave in London.Paris  
London

25. LUNDI, Saint Prosper. 176-190

Left here for London to have consulta-  
tion with Wintebottom on Edison  
V. Swan.

## JUN

London  
Maybridge

26. MARDI, Saint Sauve.

177-189

Arrived 6 A.M.  
Interview with Waterhouse WintebottomSettled some of the lamps in 57 Holborn  
Road and worked well

Dined at Verity's at Maybridge

Maybridge  
London.

27. MERCREDI, S. Croissant (D.Q.). 178-188

Met Hopkinson at dinner  
Left for Paris 8.8 at night

# JUIN

28. JEUDI. Saint Irénée.

179—187

*Paris*

*Arrived 6 A.M.*

29. VENDREDI S. Pierre, S. Paul. 180—186

*Paris*

*Working new Engine all day at my*

# JUIN

30. SAMEDI. Conv. de S. Paul.

181—185

*Paris*

# JUILLET

1. DIMANCHE. Sainte Eléonore.

182—184

## JUILLET

Paris

6. VENDREDI. Saint Tranquille. 187-179

Meeting of Soc held at Com. today

7. SAMEDI. S. Aubierge. 188-178

## JUILLET

Paris

8. DIMANCHE. Saint Procope. 189-177

Le Suaveux by boat

Paris

9. LUNDI. Saint Cyrille. 190-176

Meeting with Porras at the office  
Kathman at Fabrique all  
afternoon & dined with me at  
night

## JUILLET

10. MARDI. Sainte Félicité.

191—175

Paris.

11. MERCREDI. Trans. de S. Benoît. 192—174

Paris.

Rattman at factory -  
 fixed automobile regulator at  
 night -

## JUILLET

12. JEUDI. Saint Gualbert (P. Q.). 193—178

13. VENDREDI. Saint Eugène.

194—172

Paris.

Left for London tonight

## JUILLET

14. SAMEDI. Saint Bonaventure. 195-171

*London* Arrived at 6 A.M.  
 Interview Winterbottom and  
 meeting with Hopkinson arranged  
 for Monday.  
 Savoy Theatre at night

15. DIMANCHE. Saint Henri. 196-170

*London.*

## JUILLET

16. LUNDI. Saint Eustache. 197-169

*London* Met Winterbottom & Hopkinson  
 this morning on discussing  
 what shall be done before the  
 Parliamentary Committee in regard  
 to the application made by the  
 Electrical Maintenance and Con-  
 struction Co.  
 Left for Paris at 8 P.M.

17. MARDI. Saint Alexis. 198-168

*Paris.*

Arrived at 6 A.M.

## JUILLET

18. MERCREDI. Saint-Frédéric. 199—167

Paris.*Left for London 8 p.m.**London.*

19. JEUDI. S. Vincent de Paul. 200—166

*Arrived 6 A.M.**Commencement of examination  
before Parliamentary Committee  
Resumed at 4 p.m. till Monday.*

## JUILLET

20. VENDR. Ste Marguerite. (P. L.) 201—165

*London  
to  
Paris**Boarded on tidal train arriving  
Paris at 6 p.m.*Paris.

21. SAMEDI. Saint Victor. 202—164

## JUILLET

22. "DIMANCHE. Sainte Madeleine. 203-163

23. LUNDI. S. Apollinaire. 204-162

*Miss.* Meeting of Soc. Ind. et Com. at Edison -

## JUILLET

24. MARDI. Sainte Christine. J. Can. 205-161

*Miss.*  
*London* left for London 9.40 A.M.

25. MERCREDI. S. Jacques, apôtre. 206-160

*London* left on L'Etat train for Paris  
*Paris* 11 A.M.

Interview with Mr. Wintrobham  
in evening.



## JUILLET

*Paris*

26. JEUDI. Sainte Anne.

207—159

*Paris*

27. VENDREDI. Ste Nathalie. (D.Q.). 208—158

## JUILLET

*Paris*

28. SAMEDI. Saint Samson.

209—157

*Paris*

29. "DIMANCHE. Sainte Marthe. 210—156

## JUILLET

*Paris*

30. LUNDI. S. Abdon.

211-155

31. MARDI. S. Germain-l'Auxerrois. 213-154

*Paris*

## AOÛT

*Paris*

1. MERCREDI. Saint Léonce.

213-153

*Paris*

2. JEUDI. Saint Étienne, page.

214-152

*Interview with Mr. Long & visited  
factory with he & Pierre*

## AOUT

*Paris  
Hulgate*

3. VENDR. Inv. de S. Etienne. (N.L.). 215-151

4. SAMEDI. Saint Dominique.

216-150

*Hulgate*

## AOUT

*Hulgate*

5. "DIM. Saint Cassien, évêque.

217-149

6. LUNDI. Transfig. de N.-S.

218-148

*Hulgate  
Paris*

*Left Hulgate 6.57  
 Arrived Paris 2.00  
 Living at Long now -*

## AOUT

*Miss*

7. MARDI. Saint Albert.

*Sorry all day*

219-147

*Miss*

8. MERCREDI. Sainte Léonide.

*Sorry all day*

220-146

## AOUT

*Miss*

9. JEUDI. Saint Pierre.

221-145

*Lunched with Gilliland**Interview with Paul**Miss*

10. VENDREDI. Saint Laurent.

222-144

## AOUT

11. SAMEDI. Sainto Suzanne. (P.Q.). 223-113

*Went down with Oestermeier**Mrs.  
Houlgate*

12. "DIMANCHE. Sainto Claire.

224-142

*Houlgate  
Eodulder  
Houlgate*

## AOUT

13. LUNDI. S. Hippolyte.

225-141

*Houlgate  
John**Interview with Colonel**Chaque crain et voy hole*

14. MARDI. Saint Eusebe. v. j.

226-140

*Mrs.**Colonel at long*

## AOUT

15. MERCREDI. ASSOMPTION. 227-139

16. JEUDI. Saint Roch. 228-138

## AOUT

17. VENDREDI. Saint Mammès. 229-137

18. SAMEDI. Sainte Hédène, (P. L.), 230-136

*Mrs. Annee*  
*Houlgate* *Dec. 2nd et Church*  
*Left for Houlgate*

## AOUT

19. "DIMANCHE. Saint Donation. 231—135

*Houlgate  
Beauville  
Houlgate**Race at Beauville*

20. LUNDI. Saint Bernard. 233—134

*Houlgate  
Paris*

## AOUT

21. MARDI. Saint Privat. 235—133

22. MERCREDI. Saint Symphorien. 234—132

*Meeting of Bretons  
Continental*

## AOUT

23. JEUDI. Sainte Sidonie.

235-131

Ami -*Maced Pien a director  
of Factory.*

24. VENDREDI. Saint Bartholomy.

236-130

Ami  
Amigate*Left for Amigate with Rex.*

## AOUT

25. SAMEDI. S. Louis, roi. (D.Q.) 237-129

Amigate

26. DIM. S. Zéphirin. F. des J. Canis. 238-128

Amigate*Dined mt. Catherine at  
William the Conqueror -  
Regatta.*



## AOUT

31. VENDREDI. Saint Raymond. 243—123

## SEPTEMBRE

1. SAMEDI. S. Lou, S. Gilles. (N.L.). 244—122

*Lucas*  
*Firing boiler. Gave to Joseph*

## SEPTEMBRE

2. "DIMANCHE. Saint Justin. 245—121:

*Miss**Spent day with Goddard  
breakfast at Simon's & afterwards  
dined together Rev. de Robygnon.*

3. LUNDI. Saint Grégoire.

246—120

## SEPTEMBRE

4. MARDI. Saint Rosalie.

247-119

5. MERCREDI. Saint Martin.

248-118

*Abri.**Went to see the Steam Engine*

## SEPTEMBRE

6. JEUDI. Sainte Reine.

249-117

7. VENDREDI. Saint Cloud.

250-116

*Abri's  
Haulgate**Left at night for Haulgate  
got there at midnight*

## SEPTEMBRE

8. SAMEDI. Nativité de N. Dame 251—115

*Amalgam. Batted and children -*

*my experiment tried again  
 7 dynamo 17 lights 16.00.  
 good, 14 lights  
 16.50 time  
 110 tolls. sent recap.*

*Amalgam  
 Bayeux  
 Caen  
 Amalgam*

9. "DIMANCHE. Saint Omer (P.Q.). 252—114

*Saw the Bayeux tapestry -  
 Saw Caen pretty well -*

## SEPTEMBRE

10 LUNDI. Sainte Pul. h'orio. 253—113

*Amalgam.  
 Paris.**Left 6.57 arrived Paris 2 p.m.*

11. MARDI. Saint Hyacinthe 254—112

## SEPTEMBRE

12. MERCREDI. Saint Raphaël. 255-111

*Paris*

*Put up the 2 dynamos at  
the factory & motor & got the  
scrubs -  
With 2 cylinders  
Steady with 46 lamps  
41.50118 - 90 lamps*

13. JEUDI. Saint Maurice. 256-110

*Paris*

*Ran 3 friends at factory -  
Large C dynamo had 1st cylinder  
- then ran 1st light dynamo -  
not finished yet -*

## SEPTEMBRE

14. VENDREDI. Ex. de la Sainte Croix. 257-109

*Paris  
Amalgam*

15. SAMEDI. Saint Nicomède. 258-108

*Amalgam*

## SEPTEMBRE

*Appellate  
Vehis*

16. "DIMANCHE. Sainte Lucie (P. L.). 259—107

*Mis.*

17. LUNDI. Saint Lambert.

260—106

*Sent to Mr. Hester at New Orleans.  
Good*

## SEPTEMBRE

18. MARDI. Saint Jean Chrysostome. 261—105

19. MERCREDI. S. Janvier. Q. T. 262—104

## SEPTEMBRE

20. JEUDI. Saint Eustache.

203-103

21. VENDREDI. Saint Mathieu.

204-102

*Paris*  
*Said 100 kgls dynamite - first test.*

## SEPTEMBRE

22. SAMEDI. Saint Maurice.

205-101

*Paris*  
*W. B. children taken from St. George's*  
*Meeting with Gov. at 33 Ave de l'Opera*

23. "DIMANCHE. S" Thècle. (D. Q.) 206-100

*Paris*  
*Hotel Bristol.*

## SEPTEMBRE

24. LUNDI. Saint Andoche

367-99

25. MARDI. Saint Firmin.

28-98

## SEPTEMBRE

26. MERCREDI. Sainte Justine.

369-97

27. JEUDI. S. Côme, S. Damien.

270-96

*Année d'Œuvre Industrielle  
à l'usine*

## SEPTEMBRE

28. VENDREDI. Saint Cérin, évêque. 271—95

*Conseil Continental à  
27 Rue de la Chaux de Neuve*

29. SAMEDI. Saint Michel.

273—94

## SEPTEMBRE

30. DIMANCHE. Saint Jérôme.

273—93

## OCTOBRE

1. LUNDI. S. Rémy, évêque. (N. L.). 274—92



## OCTOBRE

2. MARDI. Saints Anges Gardiens. 275-81

3. MERCREDI. Saint Gérard. 276-90  
*à la Hotel de ville plan  
 front right*

## OCTOBRE

4. JEUDI. S. François d'Assises. 277-89

*Expérimento al Hotel de Ville -*

5. VENDREDI. Saint Froilan. 278-88

## OCTOBRE

6. SAMEDI. S. Bruno.

279-87

7. DIMANCHE. Saint Serge.

280-86

## OCTOBRE

8. LUNDI.

A DEFEAT FOR EDISON.

Sawyer &amp; Manie to Have Sale Time of Commercial Paper in Greater Length.

WASHINGTON, Oct. 8.—A decision was rendered today by the Commissioner of Customs in the instance of Sawyer & Manie against Thomas A. Edison, which involves the question of priority in the invention of "radio-transmission" and the right to the issue of a patent for the same. The Commissioner has ruled in favor of Sawyer & Manie, and has ordered the seizure of the goods of Edison in the hands of the Customs.

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9. MARDI. S. Denis, évêque (P. Q.) 292-34

*Siborne R. L.*  
*Ref. 9.*

A SUIT BY AN ELECTRIC LIGHT COMPANY.

CINCINNATI, Oct. 8.—In the suit of the United States Electric Lighting Company against the well-known electrician, who is now in the hands of the Commission on the subject of the invention of the electric light, the court has ruled in favor of the company, and has ordered the seizure of the goods of the electrician.

A FIRST PRIZE AWARDED TO MR. EDISON.

The Electrical Commission of the Cincinnati Exposition, consisting of Professor Macdonald of the Ohio State University, chairman, assisted by Mr. Lathrop and Professor Hild and French of Cincinnati, have just awarded first prize in incandescent lighting to the Edison Company and Westinghouse Electric Company. The United States Electric Lighting Company, of New York, has been awarded first prize in incandescent lighting for its system of incandescent lighting, and the Edison Company has been awarded first prize in incandescent lighting for its system of incandescent lighting.

## OCTOBRE

10. MEHCREDI. Saint François B. 283—83

11. JEUDI. Saint Gommer. 284—82

*Paris**Aud new 500 light machine  
at long (rue de...)*

## OCTOBRE

12. VENDREDI. Saint Valfred. 285—81

13. SAMEDI. Saint

*"Petit Journal"  
y today*

## L'ECLAIRAGE DE L'HOTEL DE VILLE

Il est soir, à cinq heures et demie, on a fait l'essai général, à l'Hôtel de Ville, des appareils électriques devant servir à éclairer les divers locaux du premier étage.

Les appareils sont de trois sortes :

1° Lampes ordinaires, appliquées aux murades, bureaux, les suspendues au plafond des pièces de service ;

2° Lampes portatives, appareils analogues aux becs de gaz portatifs s'allumant et s'éteignant au moyen d'une clé ;

3° Lampes montées sur des lustres de diverses formes, dans la salle des séances, la bibliothèque, les salles des commissions du conseil municipal, l'ancienne salle du conseil, au pavillon de Flore, dans l'escalier à la lumière électrique, au moyen de lampes Swan.

Dans la nouvelle salle de Ville, on avait employé au total d'éclairer, qui se rapproche beaucoup, d'ailleurs, de celui de Swan.

Le lampé Edison se compose, en la nuit, d'une sorte de boîte de verre dans laquelle le vide a été fait par le mercure. Intérieurement se trouve un arc, dans l'incandescence produit, la lumière quand y passe le courant électrique. Cet arc est un simple filament de bambou carbonisé par des procédés particuliers.

La lumière obtenue par ces appareils est douce, chaude, et les objets qu'elle éclaire prennent des tons très agréables.

Tous les appareils du premier étage de l'Hôtel de Ville ont été installés hier et aujourd'hui, les travaux en cours de finitions.

## OCTOBRE

10. MERCREDI. Saint François B. 283—83

Paris

11. JEUDI. Saint Gommer.

284—82

*And new 500 light machines  
of Way success.*

## OCTOBRE

12. VENDREDI. Saint Vilfrid. 285—81

DERNIERES NOUVELLES

Le ministre de l'Intérieur, M. de Broglie, a adressé aux préfets une circulaire relative aux élections municipales. Il leur rappelle que les élections doivent être faites dans le plus bref délai possible, et qu'il est de leur devoir de veiller à ce que les électeurs soient convoqués à temps. Il leur recommande également de surveiller les élections avec la plus stricte impartialité, et de ne pas laisser influencer les résultats par des considérations politiques ou personnelles.

Le ministre de l'Intérieur, M. de Broglie, a également adressé aux préfets une circulaire relative aux élections départementales. Il leur rappelle que les élections doivent être faites dans le plus bref délai possible, et qu'il est de leur devoir de veiller à ce que les électeurs soient convoqués à temps. Il leur recommande également de surveiller les élections avec la plus stricte impartialité, et de ne pas laisser influencer les résultats par des considérations politiques ou personnelles.

13. SAMEDI. Saint

*"Petit Journal"*  
*7 today.*

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## OCTOBRE

*Mis.*

14. DIMANCHE. Saint Calixte, pape. 287—79

15. LUNDI. Sainte Thérèse. 288—78

## OCTOBRE

16. MARDI. Saint Gal, évêque. (P. L.). 289—77

17. MERCREDI. Saint Florentin. 290—76

## OCTOBRE

18. JEUDI. Saint Luc, évangéliste. 291-75

Paris

19. VENDREDI. Saint Savinien. 292-74

*Found Hotel de Ville plans  
badly arranged + went to  
work to fix it-*

## OCTOBRE

20. SAMEDI. Saint Caprais. 293-73

Paris

*Ran Hotel de Ville plans-*

Paris

21. DIMANCHE. Sainte Ursule. 294-72

*Hotel de Ville plans ran 4 hours  
\* day & lumber up the bells*

## OCTOBRE

30. MARDI, Saint Lucien.

303-63

Meeting of *Levine Tadusoff & Coult*

31. MERC. S. Quentin, c. J. (N.I.).

304-62

Meeting of *Pompagne* *Continental*

My resignation read =

## NOVEMBRE

1. JEUDI. TOUSSAINT.

305-61

*Paris,*

2. VENDREDI. Trépassés.

306-60

*Paris*Meeting of *Comp Continental*  
not present b. org/ resignation  
was to be taken

## NOVEMBRE

7. MERCREDI. Saint Ernest.

311—55

*Paris*  
*Amsterdam**Left for Amsterdam early morning & arrived at night*

8. JEUDI. Saintes Reliques. (P. Q.) 312—54

*Amsterdam*

## NOVEMBRE

9. VENDREDI. Saint Mathurin.

313—53

*Amsterdam*

10. SAMEDI. Saint Juste.

314—52

*Amsterdam**Rotterdam**Amsterdam**Mex. Ayuda Co. per*



## NOVEMBRE

11. DIMANCHE. Saint Martin.

315-54

*Amsterdam*

12. LUNDI. Saint René.

316-50

*Amsterdam*  
*to*

## NOVEMBRE

13. MARDI. Saint Brice, évêque.

317-49

*Paris**Arrived 6 A.M.*

14. MERCREDI. S. Vénérand. (P. L.) 318-48

## NOVEMBRE

15. JEUDI. Sainte Eugénie.

319-47

Mrs

16. VENDREDI. Saint Edme

320-46

Meeting, Continental &  
Society Telegraph

## NOVEMBRE

17. SAMEDI. S. Agnan, évêque.

321-45

Mrs

Meeting Eve. Ind et Court. Edin

18. DIMANCHE. Saint Odon.

322-44

Mrs

Breakfast with Mrs & Children T. W. Crum  
at Marquary

## NOVEMBRE

*Nov*

19. LUNDI Sainte Elisabeth. 333—43

*Anniversaire de la Beatitude de Sainte Cécile  
on refusal to accept any recognition.*

20. MARDI Saint Edmond. 334—42

*Nov**Meeting Confraternité*

## NOVEMBRE

21. MER. Présentation de N.D. (D.Q.). 325—41

22. JEUDI Sainte Cécile.

336—40

## DÉCEMBRE

5. MERCREDI. Saint Sabas.

339—27

6. JEUDI. Saint Nicolas

340—26

## DÉCEMBRE

7. VENDREDI. S<sup>te</sup> Fare, vierge. (P.Q.) 341—25*All day at factory standardizing  
sample.*

8. SAMEDI. Conception de N. D.

342—24

# DÉCEMBRE

9. DIMANCHE. Saint Léonard. 343—23

*Les Savais  
Hennu Wainis with children*

10. LUNDI. S<sup>t</sup> Eulalie. 344—22

# DÉCEMBRE

11. MARDI. Saint Daniel. 345—21

12. MERCREDI. Saint Maxence. 346—20

## DÉCEMBRE

21. VENDREDI. Saint Thomas. (D. Q.) 355—11

22. SAMEDI. Saint Honorat.

356—10

*Ans**Swent here from America**Went to Factory**" Hotel de Ville**Boulevard**Gare d'Orléans**Prinseppe**" Nick Poppe & Ant. D. Martin**& see Daniel Burkhardt**" Eden Hall after*

## DÉCEMBRE

23. DIMANCHE. Sainte Victoire. 357—9

24. LUNDI. Saint Delphin. v. j.

358—8

Charles Batchelor Journal, Cat. 1336

This journal covers the period January 15, 1886-September 5, 1887 and contains numbered entries by Batchelor about his business and personal affairs. Many of the entries concern Edison's electric light and his manufacturing companies. Included are comments about labor disputes at the Edison Lamp Company and the Edison Machine Works, the formation of the Edison United Manufacturing Company, and the transfer of the Edison Machine Works to Schenectady, New York. There are also newspaper clippings relating to labor disputes and legal actions involving Edison and his companies, including a legal opinion on the validity of Edison's electric light patents in the United Kingdom. A number of entries concern experiments on dynamos, lamps, transformers, and phonographs. Also discussed are Edison's health, his marriage to Mina Miller, and the construction of the new laboratory at West Orange, New Jersey. An anecdote about Edison that was related by his father, Samuel Edison, is recorded. Statements of Batchelor's personal assets and liabilities appear at intervals of six months. The book contains 285 numbered pages.

Blank pages not filmed: 1-3, 284-285.

Missing page numbers: 69-70.

1. Electric Light meeting, Jan 15<sup>th</sup> 1886.  
 3.15 p.m. to discuss  
 our underground rights in eastern  
 district.

2. Temp Co meeting — attended. Jan 18 1886.  
C & T Co meeting, attended subject:  
 Annual report.

3. Central Station dynamo — Jan 19<sup>th</sup> 1886.  
 Designed a 150  
 volt 500 ampere 700 revolution dynamo  
 for central station work.

4. Telegraph dynamo. Designing a new plant  
 for N. O. & C. to duplicate the plant  
 that I put in to work the telegraph at 16  
 Broad Street. Consists of a straight  
 line engine and two 250 x 50 amp 580  
 turn dynamo.

5. New Brunswick dynamo: No. three "25" testing  
 today.

6. New evening business: Jan 21<sup>st</sup> 1886.  
 Made estimate for cost  
 of wire covering business and decided  
 with O'Brien to go ahead with it at  
 our shops in Bridge St Brooklyn.



7.<sup>1</sup> Jan. 22, 1886.  
H. V. Tel. Co. Machines. - One of the dynamos  
 of the old plant got closed and the  
 whole load was carried by the other.

8.<sup>1</sup> Reception at City. at night. attended -

9.<sup>1</sup> Jan 30<sup>th</sup> 1886.  
Edison Machine Works. - meeting of the  
 Edison Machine Works  
 to Edison Mfg. Mfg. Co  
 & the Electric Light Co to confirm the  
 consolidation of all three into "E. S. M. W."

10.<sup>1</sup> Feb. 1<sup>st</sup> 1886  
R. R. Lathrop and Telegraph. - Was present at  
 an exhibition of his system at Staten  
 Island, it worked well.

11.<sup>1</sup> Feb. 2, 1886.  
Price of lamp. Inval sent to the Company  
 Antismoke Edison officially. Got the price  
 of manufacture of the lamp at 33¢.

12.<sup>1</sup> Commutator connection. Signed Canadian  
 application for patent on this new method  
 of connection

13.<sup>1</sup> Feb. 9, 1886.  
Boston left for Salem at 10<sup>15</sup> a.m.

<sup>14</sup>Colton Station. Visited the station. They were clearing out the place and had two engines here best. Went to <sup>15</sup>Lawrence and saw the station. Machine running in very bad shape, sparking terribly.

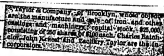
<sup>16</sup>Pacific Mills. Visited Pacific Mills today. <sup>17</sup>Portland Station. Visited the Portland, Me. Station at night. Just had a terrible storm (sleet) which had torn down all the wires in town. Municipal running well.

Feb 12 1886  
Called on Mr Hayes the Chairman of the Lighting Committee in Portland with Mr Sawyer. to talk on lighting matters.

<sup>18</sup>Presidence. Sunday, Feb 14 \* 1886  
Spent here since Saturday morning at 2 a.m. by floods etc.

<sup>19</sup>Sims - Edison Fish Lapsides. Sunday, Feb. 16, 1886  
Sims - Edison Fish Lapsides, ~~Edison~~ Edison, J. and Gardner Sims signed as incorporators of his company today.

<sup>20</sup>Layton and Co. Feb 17, 1886  
Layton and Co. Layton, Thomas and I signed



Article of incorporation of Taylor Co.

21. Sun. - Olson Feb 16<sup>th</sup> 1886.  
He had a meeting of incorporators & elected directors and officers. Art Lewis, G. Lewis & I met Mr Holcomb at the Windsor at night and made arrangements for the sale through him of the Taylor Co. tract in Ohio.

22. Friday Feb 17<sup>th</sup> 1886.  
Sun. - Olson Feb 17<sup>th</sup> 1886. Had another meeting at the office of the President Mr Anderson.

23. Saturday Feb 18<sup>th</sup> 1886.  
Wrote Odismiana, Farewell dinner to S.A.E. prior to his marriage. Present. C. B. Schuler, C. Johnson, P. Dunt, A. White, J. L. Linton, G. C. Lewis, Geo. Lippman, P. Bergman, C. B. Olmsted. General regret that W. H. Lewis & W. L. Allen had somehow been overlooked.

24. Finished 'Carnegie's' round the world. Feb. 22<sup>nd</sup> 1886

25. Olson's marriage. Feb. 23<sup>rd</sup> 1886.  
Left west party by special car for Akron and attended in 24<sup>th</sup> returning on the 25<sup>th</sup>.

26. Feb 24<sup>th</sup> 1886.  
Sun. - Olson Lippman. Art Lewis, G. Lewis & I met Mr Wilson at his home & discussed.

284 W. D. RICH  
SUPT. OF CONSTRUCTION.

THOMAS A. EDISON,  
Central Station, Construction Dept.,  
NO 65 FIFTH AVENUE,  
NEW YORK.

Address reply to.

188

Recd. Mr. Wm. M. Ward Esq. of  
Charles Poterkin the  
Supt. of Pennsylvania  
being a few times  
of the Edison Co. to  
the Edison Electric  
Power and Railway Company

Edison Co.

Lapsed business, my opinion of Wilson rather  
very unfavorable

27<sup>th</sup> Tuesday March 2 1886.  
Williamburg property. Signed Bond and  
mortgage for \$3200 5 years for two lots  
28<sup>th</sup> Cr. Rd 10<sup>th</sup> St + Berry St. Williamburg  
Taylor & Co. Held meeting of directors -

29<sup>th</sup> (March) Feb. 4 1886  
Hired Edison Shop. At a meeting of the  
directors of the Edison Co. for isolated  
lighting & day the directors voted in fa-  
vor of a proposition put forth by the  
Pres. in which he isolated the  
small construction Co. to do the business  
instead of doing it itself with the object  
of getting entirely out of construction  
at some future time.

30<sup>th</sup> (March) Feb. 6 1886  
Hired Pulverizer. Agreed with R. H. Boyer  
to make a pulverizer & keep it in  
working order for three months for  
two hundred shares of stock. Edison  
agrees to bear half the expense and I  
deliver half the stock to them.

31<sup>st</sup> (March) Feb. 8 1886  
Purchased R.R. Motors. 4 new Niagara series  
of 500 each for 4 New Bear motors.

32<sup>1</sup>United Edison Sys.

Nov 26 1886.

Johnson, D. Bergman and Upton  
Assured Shop Consolidation33<sup>1</sup>Prague kids R.R.

Nov 27 1886

Tried his at 24<sup>th</sup> Street (excellent)34<sup>1</sup>H. V. Light Co. Plant

Nov 29 1886.

Tried his plant b-  
day. Good, no vibration, everything  
satisfactory.35<sup>1</sup>Johnson's Lamp

Nov 30 1886

Tried the principle of  
Johnson's Lamp at the C. M. W. delay  
and it worked in each case in factit worked in every case as he had  
a large number of examples36<sup>1</sup>Prague R.R. kidsDec 1<sup>st</sup> 1886.Another trial of his  
at which Alf. Rowland assisted  
was a perfect success at 24<sup>th</sup> Street  
now it is proposed to fit up a Car37<sup>1</sup>U.S. C. R. R. Co.April 5<sup>th</sup> 1886There was a meeting of the  
directors of the C. R. Light Co. to consider  
the consolidation of C  
R.R. interest

362

United Edison Shops.April 6<sup>th</sup> 1916

In a discussion at 60 S. Ave. today, Chas. J. Upson Co. Rygman practically agreed that the following was a basis on which the Shops could take up the isolated Co. business. The consolidation of the Shops being abandoned at present as intractable.

1. Isolated Co. goes out of business.
  2. Shops form a selling department which receives goods from Shops at present list prices of Shops. Selling Dept. has no interest in new or renewed lamps other than a percentage for handling them, that all going to the Light Co. or Isolated Co.
  3. Selling Dept. pays a royalty to the Light Co. of 2% on everything.
  4. If selling dept. makes losses the same to be shared equally by all five Shops.
  5. All profit to Selling Dept. to be divided between itself and the Isolated Co.
- In an answer from Edison to a telegram. I sent he says he agrees with us on this & we are now working up the details.







\$8.44 for share with \$8,000. \$8,000 of  
his fund goes in Treasury. \$8,000 goes  
to him. Gold, Luis makes \$8,000 +  
C.A.G. asks for \$2,000 for himself + says  
he will get all we want

41<sup>st</sup>Apr 28<sup>th</sup> 1886.

N. U. S. L. C. dynamo. at 28<sup>th</sup> St.

Saw Mr. Bern about putting in five  
small machines at 23<sup>rd</sup> Street  
Building.

42<sup>nd</sup>

Apr 29 1886.

United Edison Photos. Bergman. C.A.G.

Upton and myself met at 63<sup>rd</sup> St. Ave.  
It was decided that "Penture" should  
be excluded from the royalty, that  
we wanted 10% of price of lamps  
for handling them, and 2% royalty  
instead of 3% as specified in Mr.  
Costar's letter

43<sup>rd</sup>May 1<sup>st</sup> 1886.

Labor difficulties. Committee of the shop  
presented me with a list of letters from  
the labor union and asked us to act  
up to them or they would strike.  
The principal items were:-  
1. Men have labor + ten hours pay  
2. One man to run only one machine  
3. Waiters time half until 8 p.m. +  
double time after



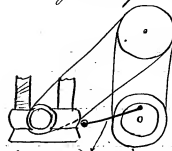
best block in the city. In the next cellar are about 6000 cells of battery of the W.V. St. C. and I have made arrangement to make a machine to do all this by dynamo.

55

Water Plant, at Commercial Gazette. The carbon in lamp shaped like ours but shorter, should judge about 80 rolls. They had an instrument in circuit to tell anything about

56

bad or Gen. F.  
Central Union depot, Cal. This plant has two 400 light 6 over dynamo driven by Buckeye engines. The plant is under the sidewalk & is cramped for room, in order to get long enough belts they had to countershaft up 20 ft.



Crankshaft for 17 engine

Now the  
Mills & Hunt  
Burrill House  
and other of our  
plants.

57.

Discount: Made a verbal arrangement with W. C. Light Co. to give 5% off of sales reached \$10000. regarding I got prompt payment the 25<sup>th</sup> of each month.

58.

Les Minies accounts settled with W. C. Clark. They to pay our bills and W. C. Clark will give them a credit of \$300 against new machinery in the future.

59.

Musley's plant  
City Hall plant

Opera House plant

Union Square Club

Metcalf plant in City Hall. visited this

4 300 light machines

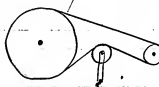
1 100 light of 125 H.P.

This drives a shaft having 4 10 foot pulleys on which drive directly on the dynamo & are so close that they have to use under wheels. 20 - Pulleys.

wee clutch pulleys.

Amper meters were marked for 300 lamps of 11 volts each.

Safety catch in each circuit - exactly same as ours.



64<sup>5</sup>Life of Camps

New York May 9<sup>th</sup> 1886  
 In my journey west I noticed that in Cincinnati the short life of Camps was complained of. Being whilst at Chicago, I find them making contracts every day and guaranteeing 1000 hours - In both places their candle power looks all right - Chicago say they have in difficulty and find almost guarantee 1000 hours. I think it is because they have better men and larger plants also their plants are put up to have very little variation in drop.

65<sup>5</sup>Water instead of Oil

All machines are packed up for water in Chicago and that is an excellent thing.

66<sup>5</sup>Edison not polar amateur

May 11<sup>th</sup> 1886.  
 Edison gave me an appointment to say -  
 I have to have no jobs in the amateur wind in the Hotel for every one that passes over to wind me personally. I want to see the magneto effect. I cannot quite see that it will do it but I shall try the experiment -



67<sup>th</sup> N. Y. May 12<sup>th</sup> 1886  
Chas. Machine W. Gannett Road. Called  
 and notified me that he should  
 take out the frame in the shop, as  
 when we gave up the right to the  
 base he had a right to take them  
 out. He wants to pay the cost  
 of them.

68<sup>th</sup> Williamburg Property. Sent my deed  
 for two lots No 10 St Henry &  
 Jackson & Burn to have them  
 deeded to Taylor and Co. subject  
 to the Hunt mortgage -

69<sup>th</sup> Upton sailed for Europe. May 15<sup>th</sup> 1886

70<sup>th</sup> Taylor & Co. May 19<sup>th</sup> 1886.  
 Loaded my two lots to  
Taylor & Co. today.  
 Sent in sworn statement of value  
 of Taylor & Co. for taxes today.  
 71<sup>st</sup> labor trouble. Men have all struck on  
 14<sup>th</sup> & after consultation for two  
 days we have decided to stand  
 up against them in regard to  
 running the shop as we see fit.  
 We have conceded the 9 hour  
 work and 10 hr pay. The  
 contract clause we cannot allow.



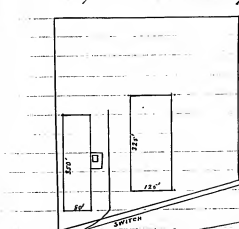
O. Edison

May 22

New Shop

May 22, 1886

Ever and myself went to Schenectady to look at some shop property which Geo. Place said could be bought for \$55,000. On the left hand side of the N.Y. C.R.R. about 1000 yds from the Station we found two shops, evidently built for manufacturing. Alternatively there were two shops: 550 x 80 ft.



555 x 125, one of which had a boiler house and chimney attached as was proved to the other base.

This is a decided bargain. Geo. Place goes there today and if he gets an option for 10 days or if

we can investigate & decide for the C.E.W.





No. 3

Edison Machine Work.May 23<sup>d</sup> 1886

Work for Mrs. Allen.

Jan	\$0.008.41	July	\$16.901.20
Feb.	13.402.88	Aug.	32.434.01
Mar.	16.345.14	Sept.	41.858.43
Apr.	24.939.60	Oct.	26.838.63
May.	18.614.95	Nov.	26.885.92
June.	14.457.90	Dec.	27.629.49
Total \$292,862.91			

No. 4

Edison Telos.

Jan. Dec.	\$58,500.00	Old bal. 1884	\$40699.37
Ind. Transp.	14,292.16	Profit.	61,100.20
Balance	\$46,546.17	3 Transfers	12,520.00
Or	\$112,339.63		\$114,339.63

No. 5

New Works. H. C. M. W.May 25<sup>th</sup> 1886.

At a meeting of the Edison Machine Works board today it was decided to give to Geo. Place the right to negotiate for the Laboratory constructive work at a price not to exceed two (including all consumables) \$42,570. Meeting was held at Laboratory and adjourned to Edison's home at Orange, N.J., June 8<sup>th</sup> 91 up with him & bring more detailed information of the property.

42

John Stables.May 26<sup>th</sup> 1886

The C.M.W. started up today (ship having been stopped since the 16<sup>th</sup>) with about 22 men.

Sprague R.R. Motors.

Sprague R.R. motors sent in today to have the fields wound with the plans were as previously as it is paid they cost too much.

81

Edison Machine Works Stock.May 26<sup>th</sup> 1886

Received today my interest in the stock of the Edison Machine Works Consolidation 1355 shares. It is divided as follows:

J. A. Edison 5441 shares.

C. Batchelor 1355

J. W. Hunt 155

H. Loom 114

J. H. Myle 155

J. P. Morgan 155

J. Lowell 125

\$4500 at \$100 each.

82

New Shops. C.M.W. A judgement dissolving the corporation of the McQueen locomotive works at Richmond, was granted by Judge Fish today on the grounds that the Co has not paid in their stock that was carried on the books for which they were incorporated. John A. McQueen was made receiver. An

inventory will be taken as soon as possible and  
the property sold at auction

85.1 May 27 1886

Naval Stores Light Co. Montreal Can.

This factory was damaged by fire to the  
extent of \$7,000. insured.

84'  
New Shop

May 29<sup>th</sup> 1886.

Arrived in Williamsport Pa & saw some  
plots of ground for a new shop. Also saw  
small abse. Met Mr Shaw & Mr Sumner  
I went to see the site of the old Star Oil  
Co about two miles out of town on the  
R.R. It was afterwards shown a  
piece of land about 8 acres opposite the  
depot & to which we could get a side  
track from the New R.R. but not from  
any other. Left plans of new building  
with Shaw & asked him to get informa-  
tion on other matters from manufactu-  
rers which we could not get along to it  
being vacation day. Left at noon for  
Burlington

88.1  
Labor troubles.

May 31<sup>st</sup> 1886

Met the meeting in 114 Gough  
St (with Mr. Linn) the Shop Committee  
and agreed that in future the Shop  
should run as follows:-

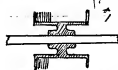
I have labor 40 hours day; time and a half until 10 p.m. and double time afterwards. In every other respect he must be paid just as the managers decide & no interference whatever to be tolerated. On this condition the men all agree to come in to work tomorrow morning.  
 W. Hume & I went in Detroit looking after the work for that town.

86°

June 1<sup>st</sup> 1886Labor troubles.

All our men in today and as such the strike is  
 dynamo for power station.

Mr. Sprague suggested that we should make a dynamo different from the ordinary Edison type for power station. The difficulty of getting a license from the Edison Electric light Co. being great among the men existing contracts with other people. He proposed to make an armature as per sketch 1 the outside of the cylinder



proposed to fill the cylinder with plate of iron and as it

seems to be cheaper than our present armature I decided to make immediately a #3 in that manner to see what difference in economy and price it would make.

88.

May 31<sup>st</sup> 1886.  
Contract price made Oct. 15<sup>th</sup> 1886.

on Edison Dynamo work.

Making everything on a dynamo.

#1	\$2.20	#6	\$3.50	#16	\$6
#2	\$2.50	#8	\$4.40	#20	\$7.55
#3	\$2.75	#10	\$4.40	#24	\$9.80
#4	\$3.40	#12	\$5.05	#28	\$5.05

Cores: Turning boring, tapping & winding -

	5 ft x 6 ft	Midy.		Turning	Winding
#1	.50	1.70	#10		
#2	1.20	1.90	#12		
#3	1.20	2.35	#16		
#4	1.35	3.60	#20		
#6			#24		
#8			#28		

Windings: Rad bld, magnet coils, excitors

	Comm	Wings	W. nut		
#1	2.60	#6	\$3.50	#16	\$4.35
#2	2.60	#8	\$3.50	#20	\$4.35
#3	2.60	#10	\$3.50	#24	\$4.35
#4	2.60	#12	\$3.50	#28	\$4.35

Pillow Block. Turning and fitting on rockers arm.

*1 14.0	*4 1.50	*10 2.55	*20 3.15
*2 16.0	*6 1.50	*12 2.55	*21 2.11
*3 16.0	*8 2.00	*16 2.75	*22 2.05

Shaft. Turning, plates bored, turned and  
Amateur boy turned after assembling.

*1 1.50	*4 2.00	*10 2.50	*20 5.20
*2 1.50	*6 2.40	*12 2.25	*21 2.60
*3 2.00	*8 2.60	*16 3.90	*22 2.95

Assembling Amateur. Keyways cut, plates  
cut for key and divisions, discs turned off  
plates keyed to shaft, discs assembled and  
made ready for turning on lathe.

*1 1.60	*4 1.95	*10 3.00	*20 4.00
*2 1.50	*6 2.25	*12 3.40	*21
*3 1.50	*8 2.40	*16 3.90	*22

Assembling dynamo:-

Drilling, tapping, & turning. Bore and zinc  
piston block, & fields, boring piston block and  
fields, tapping piston block, drilling Tapp,  
Keyport & tail, assembling machine before  
and after testing.

*1 4.55	*4 6.75	*10 9.00	*20 13.50
*2 8.20	*6 7.50	*12 9.75	*21 7.50
*3 6.00	*8 8.25	*16 12.00	*22 9.75

Mapping Comm. bore. cad.

*3, *4, *6, *8, *11, *22, *24	1 1/2" each
*1, *5, *7, *9, *11	1 1/4" "
*10, *12, *14, *20, *22	2 1/2" "

## Mica. Couplers for commutator.

*1	1.75	*2	3.00	K	1.75	H	1.75
*2	1.95	*10	1.95	G	1.85	L	1.75
*3	1.75	*12	1.95	R	.85	M.1	3.40
*4	1.75	*16	1.95	T	1.75	M.2	4.15
*6	1.75	*20	1.95	S	1.75		
*8	1.75	Z	1.75	Y	1.75		

## Commutator Complete - mica. all + base.

## Brazed furnished.

*1	2.75	*8	6.25	H	4.25	Z	4.60
*2	3.40	*12	5.75	L	4.75	Hml	4.75
*3	3.60	*16	5.75	K	4.55		
*4	5.35	*20	6.05	T	2.75		
*6	4.35	M.1	9.35	S	4.00		
*8	4.45	M.2	10.45	T	4.01		
*8	5.45	G	2.45	Y	4.50		

## Brushholders. all table and vice work done.

They must be turned in Johnson

Complete with studs nut + fibre.

Complete. We furnish machine screws.

\*1 3.00 per set

\*2, 3 + R. 3.00 " "

\*4 + T. 3.10 " "

\*6, \*8, \*10, \*12 + S. 4.75 " "

\*16 + H. 3.75

\*20 - 4.15

## Brushes. Making Complete.

\*1 60 2, 3, 4. 10¢ 6, 8, 10, 12, 16. 25¢

\*20. 1.75, K 2.75, Z 4¢. H long 25¢

A.C.S. 40¢, K.C.S. 21¢.



*Pulley B. Turning, slotting & finishing*

"1- .85 "3, 1.10  
"2- 1.05 "4- 1.15

*Shafts making complete*

"1, 1/2 "2, 3, & 4, 18¢  
"6, 7, 10, 12, & 16 25¢, "20, 11¢

*Pulley A. Turning, slotting, drilling and tapping*

"6 1.05	"12 1.35
"8 1.05	"16 1.40
"10 1.35	"20 2.40

*Staves making complete*

"1, 2, 3, 16 & 20 40¢  
"4, 6, & 8 45¢  
"10 & 12 50¢

*Rabbit boxes: Boring and turning*

"1 1/4 "8 2¢		
"2 1/4 "10 3¢		
"3 2 1/2 "12 3¢		
"4 2 3/4 "16 4¢		
"6 2 1/2 "20 4¢		

*Building base frames:-*

"1 1.40 "6 2.35 "7 2.10	
"2 1.45 "8 2.35 "20 4.15	
"3 1.45 "10 2.45 "21 2.	
"4 1.45 "12 2.55	

*Anna/roco's*

	winding	Armature	Angular Resistor			
"1	2.80	4.00	1.00			
"2	4.50	1.75	1.10			
"3	4.50	2.40	1.60			
"4	5.40	2.40	1.10			
"6	3.75	2.75	1.10			
"8	3.50	2.80	2.00			
"10	3.50	3.20	1.40			
"12	4.00	4.00	2.50			
"16	5.75	4.75	2.50			
"20	6.50	6.00	3.10			
M1	8.00	5.00	1.50			
M2	8.00	5.00	2.50			
8.00	3.75					

getting ready to cal. Mapping, box, filling  
ammunition & powder arm, balancing  
pulley & tapping on

1	3.00	10	5.30		
2	3.45	12	3.30		
3	3.45	16	6.00		
4	3.45	20	6.00		
6	4.30	M1	4.50		
8	3.00	M2	3.30		

89.

June 3<sup>rd</sup> 1886United Edison Shops

C. H. J., J. A. E., Bergman, Hutchinson  
thru Ed J. met at laboratory &  
discuss ways and means to get over  
the difficulties that put themselves  
in the way of starting this business.  
It was decided that the C. H. J.,  
Bergman & C. & the Lamp Co. should  
each put up \$4,000 each. As the  
C. H. J. has many obligations to  
meet this summer he chose to  
be advanced (as Ed Johnson said) &  
it by the Lamp Co. All goods  
delivered to the United Edison Shops  
should be paid for by note of the  
United Edison Shops endorsed by  
the three companies.

It was generally agreed by all that  
if Sypher & Co. place out \$2,000 for  
\$19,000 per year that it would be well.

to Dr. Es. Bergman to sell their fixtures  
go to the United Edison shops at 50% off.  
Progress Notes.

Look an order to alter the ten K.K. armatures  
to same winding as the last ten for  
\$100 each.

Look 20 K.K. at #	\$110-739
" 10 14 HP at #	\$110-739
911 " 10 3 HP at #	\$162-749

W. V. L. Dr. Machines at 25% off

Gave in three estimates on his work  
today 5 dynamo & all brushcrafting,  
direct pulley shafts, complete running.

921

Repair Central Station.

Mues returned and he looks undisturbed  
by us shall get the feeders but we shall  
have to put down the continuous feeders

931

Woburn Station.

usual returned made very satisfactory  
arrangement for payment

941

New Shops.

Mues told me today that our  
negotiations for the McQuisen Power  
Shops were completed. We should be  
called on to pay the money shortly -  
Soubrier has thought of the matter  
in hand & is now searching

955  
Edison Lamp.

In *Electrician's*  
May 2, 1886.  
Section of  
Justice Built of  
London in  
Re Case of  
Edison v.  
Northman & Hawson

June 5<sup>th</sup> 1886

# JUDGMENT.

Thursday, May 20th, 1886.

The trial of this case terminated on Wednesday evening, and Mr. Justice Brett delivered judgment early on Thursday. He shall give a verbatim reproduction of the judgment when the proper stage of the proceedings is arrived at in our detailed report of the case, and content ourselves now with placing before our readers on abbreviated account which will put them in possession of the main points on which the judgment was based.

His Lordship, having ascertained that at an early stage of the proceedings he intimated that there was no evidence of infringement of the Swan and Osiningham patents, and that therefore the validity of those patents was beyond the sphere of the present inquiry, proceeded to deal with the Edison patent. There was one fact beyond contest, he said, namely, that before the date of Edison's specification no good and efficient incandescent electric lamp was made or known. He accepted, without hesitation, because it was also accepted by all the defendants' witnesses, Sir Frederick Bramwell's conspicuous description of Mr. Edison's invention, viz. that it is a vessel made entirely of glass, containing a carbon filament attached to conducting wires, the wires being sealed through the glass and the vessel exhausted of air to a very great degree. The defendants denied the validity of the patent, and also denied that they infringed it. He had all along been of opinion that there had been no infringement of claims Nos. 3 and 4 in Mr. Edison's specification; and he now also thought there was no infringement of claim No. 1, but in the view he took of claim No. 2 that question became unimportant. The question of the infringement of claim No. 2 depended on the meaning to be attached to the words "a carbon filament." If these words meant a carbon filament "as described" in the patent, he should hold that there was no proof of its infringement; but he did not so interpret those words. He held them to mean any carbon filament, however made, which possessed certain qualities or properties mentioned in the specification, or necessarily resulting from the description there given; to assure that description the carbon filament must possess durability and resistance, must be of small cross-section, offering a high degree of resistance to the passage of the electric current, and must present but a small surface from which radiation of light could take place. He was disposed also to think, but refrained from giving a decided opinion, that the degree of resistance must not be less than 100 ohms. Taking this interpretation as correct, it was clear there had been infringement by the defendants. Taking Mr. Hawson's evidence, in which he said the defendants used carbon filaments, connected at the ends with platinum wire, in a vessel made wholly of glass, the leading wires passing into and from the receiver being sealed into the body of the vessel, and that the carbon filament used was flexible and as stable at high temperature as it could be got, but that it was not made by Edison's process—taking that evidence, and applying his interpretation of the words carbon filament, there was no infringement of the patent. But it was said, assuming the infringement, the defendants are not liable, because the patent is invalid. The first reason in support of the invalidity was, that "a carbon filament" when that is meant what he had said it meant, was a description too vague and indefinite, or, to use the Solicitor-General's words, was too large. That was an argument, in which he could not assent, for he saw no reason why a carbon filament having the properties mentioned in Edison's patent, and which the patentees told the public how to make might comprise the whole of a patent, although it was capable of being made by methods and of materials other than those set forth in the specification. Secondly, it was said that the specification was not such as would enable the competent





Pieces of Lumber.

Sec. 40. On the	Pie.	Sec. 40. On the	Pie.
500,000	2.45	155,000	.95
450,000	2.27½	115,000	.87½
400,000	2.12½	105,000	.84½
350,000	1.96	90,000	.78
300,000	1.80½	80,000	.75
250,000	1.47	67,000	.72½
200,000	1.34	56,000	.67½
150,000	1.26	41,000	.54½
100,000	1.22	41,000	.52
144,000	.96½	32,000	.44
		24,000	.42

He above for 3 wire mains

For peders 5% per foot extra

These prices are selling prices & don't include

1013

Camp factory.June 11<sup>th</sup> 1886

Small tells me that the complaints on bad lamps have been so great that L.A.C. Co. had to get out here & take charge of the manufacturing & get it back on a solid basis. He claims that up to the present the lamps were bad as the time but has generally put off all complaints until they don't not be put off any longer.

William Machine Works.

Small and Small died and we brought him or discussed matters relating to the new



104<sup>a</sup>Job at Khamstad.

Letter to Mr. Holt-Dun. and I had an interview with Mr. Frager relative to his working Japan. Mr. Dunmore & I have a meeting Monday of himself, Anderson, Sean & myself to discuss the Khamstad contract (if any) in Japan & take steps to contact Mr. Frager how his company can act for us here. He has a provisional order for one torpedo boat for Japan.

105<sup>a</sup>Plant Manufactory.

June 11 1946.

Year	Lamps sold	Brigging	each lot.
1941	34,594	13,175.00	
1942	200,679	91,230.00	
1943	333,247	139,755.00	
1944	370,073	161,863.00	
1945			

106<sup>a</sup> Compound Dynamite June 11 1946.

I find that compound dynamite are defective in that whatever you do to keep the bolts constant on a dynamite does not alter the fact that you must use the brushes to the wire sparking point. In machines with weak fields the sparking is constant & makes little difference but with no strong fields the difference would burn up the brushes. With a 2 compound we got 110 milli with full load & only 111 with no load but it brought it to 126 &.

to adjust the brushes to the new sparking point. He tried putting the brass wire on one side only & doubt if possible but it made no difference.



The trouble is that the N of the armature in coming over induces a S pole at x then making the brush lead up further for the neutral point will put load than we had. I propose to rotate this by making the point at x strongly N by the current from the armature thus pushing back the N of the armature and keeping the new sparking point constant. Is:-



The object in figure 1 is to so magnetize the point or tip that ~~the~~ induction it will keep back the distorting effect of the armature on the line of force at this place and no matter what current there is in the armature the line of force at x will always tend to go straight to the commutator. In the second case the tip is so placed that it will magnetize the rim of the armature in such a direction

As to neutralize the load & tend to  
keep the neutral point in one place.  
I shall immediately try both of these.

New Notes 1041

June 13<sup>th</sup> 1876  
Spent today in Schenectady and Leno  
and Henri. Went up by boat on 12<sup>th</sup>.  
Got plan of place from Leno and  
measured off some parts to verify it.  
Took a carriage and went all over the  
town. Mr. Smith of the Leno works said  
they had at present 900 men, machines  
ranged from \$1.75 to \$2.25 per day. Rent  
was cheap.

Water Transformer 1085

June 14<sup>th</sup> 1876.  
Fixed his machine this morning and  
found that there was an exceedingly  
small displacement of franks to the  
thin case of. The coils are wound one  
on the other. It would be better to  
wind them side by side. Walters has  
decided the winding & there must  
be a dam to must put on & it is ma-  
king war. This is shape of iron of ar-  
rangement.

1095

W. H. M. Plant at 25<sup>th</sup> St. Met Lysar Brown  
and took at 25<sup>th</sup> St and received the  
order for the 5<sup>th</sup> machine all number  
complete on base table & connected to

He signed.

European Light Co. 110.<sup>s</sup> Held a meeting at Cutting's office of board to consider the action taken in regard to Pellard's scheme in Europe. Blinn & Batchelder as a committee were authorized to go to him (Pellard) lawyers of attorney if they saw fit.

Blinn Wins Find Spokane. 111.<sup>s</sup> Saw Anderson about the agency for Japan for Niagara & Co. He found that the agency (not exclusive) has been given to Holcombe) therefore all we could do was to get them to work together - Niagara will see Anderson & see what can be done

112.<sup>s</sup> Notes Held 1/40 - of Taylor & Co. and 1/2, 945. 51 9  
in Blinn Machine Works notes

113.<sup>s</sup> Notes June 16<sup>th</sup> 1886. Received search from Toulumson of the McQueen locomotive works and J.C.P. says here is no doubt it is all right and Delaney has right to Bureau but it to Blinn & not over with regard to the said Toulumson & give us a more definite letter as regards the letter

114.<sup>s</sup> Notes Blinn Notes. Final contract was submitted here in writing manner & securing interest. Directed over J.A.E., J.K. Allen, Batchelder, C.H. Bayman, Blinn, Hutchinson.

suggested that we do not want Hutchinson. In as he is not a stockholder in the Company and he is always here to be consulted. We should either make it five or put in another stockholder.

June 17<sup>th</sup> 1886  
Shipments for June. Dynamo 26  
 Motors 31

Billed at \$1,328. or \$1.09 per day.  
Municipal System. Attended a meeting at 65 St Ave to remedy the coils in this system; appointed a committee of Andrews, Sturtevant, Howell and Peck. to see that the proper apparatus was made. Document

1. E.M.F. of dynamo
2. Volts & ampere variation of lamps
3. Peak paper put out
4. Johnson cut out lamp
5. Lamps on standard 100 volt board
6. Cut out wires on board

Notes for Municipal lines -  
 on our books today

Dynamo 8.7  
 Motors 31 = 168.

Prod. Saps. Sams made a racoon full run with the first torpedo of the year. Had it accepted. 10.5 miles was the good run.



could not be done until tomorrow or next day.

125\*

United Edison Shops.

June 24 1886.  
Met and made over a director in place of Klein - Edison Co. and Light Co. met and authorized the taking of the business of the Edison Co. by the United Edison shops. Stephen May has said but we agreed to take 65% of income.

126\*

New Shops.

June 25<sup>th</sup> 1886.  
Delaware. Lumbard, Insull, Snow, Geo Place and myself met at 121 Chambers Street N.Y. today and I gave Geo Place check for \$10,000 - and he delivered to me the deed for the property known as Mr. Green's.

127\*

United Edison Shops.

June 26<sup>th</sup> 1886.  
The board of directors was again changed today - I am - Sub. of Ed. Co. & N.Y. & Bagman, F.N. Upson, & Chas. H. Hatcher.

128\*

Charles

Went to Staten Island & see Buffalo Bill's show with Chas. & family -

129\*

Williamburgh Block.

Went to Ram Hunt today at Morristown and arranged to turn back the plot of land & hunt for a considerable time of the sort of shooting etc. about 4:00 -





135<sup>o</sup> Taylor & Co.June 21<sup>st</sup> 1886Statement of Taylor & Co. made June 9<sup>th</sup>  
after 2 month term in co. partners -

Bills receivable \$2,381.81

" Payable - 3,966.04

415.44

Paid in bank \$1,141.60

Dish 1,125.00 \$3,096.60

over &amp; above balance \$4,012.34

136<sup>o</sup> Condensers.June 29<sup>th</sup> 1886

Delivered first Condensers to Sale

to 91 &amp; 340 Hammingburg to day

41 &amp; 2.

137<sup>o</sup> Milan

Lect here from Milan

138<sup>o</sup> Detroit Feeders

Small telegraphs for

Cellender kids (P10) below us for feeders

B. &amp; S. telegraph then that they must

have armored cable or the Light B

would not pass it.

139<sup>o</sup> Endorsement.Endorsement of B. M. W.  
to Geo. Place for \$2200 - Due Oct 31<sup>st</sup> 1886.140<sup>o</sup> Lamp factory

In of lamps made at Edison Lamp Co.

1881 34,594 sold \$3,145.00

1882 202,689 " \$9,230.00

1883 333,244 " \$13,458.00

1884 340,043 " \$161,863.00

141<sup>st</sup> Mgt. B. Meeting.

June 20 1886

At the board today we appointed a Committee of three, himself, Johnson & Foster to agree and act on what shall be used for the two uptown districts of all unanimous. Then give out the Con-tracts

142<sup>nd</sup> Descending Oiled wire (Amateur)July 1<sup>st</sup>

Found on the Prague armature that it was almost impossible to get it connected up without a cross wiring to the oblong & flattening making it so easily damaged. While other wiring well planed & no time more pouring than oiled flattened wire. This I believe is in a great measure the cause of so much trouble lately on our armatures.

143<sup>rd</sup> Defect. Station.July 3<sup>rd</sup> 1886

James returned with order for letters from Defect: after a desperate fight with Callender & Co.

144<sup>th</sup> GreenwichJuly 6<sup>th</sup> 1886

Have sent 4<sup>th</sup> & 5<sup>th</sup> at Johnsons at Greenwich. It went up 3<sup>rd</sup> p.m. Y.R.L.  
10 am today.

145<sup>th</sup> Prague's French PatentJuly 6<sup>th</sup> 1886

Received 'Prague's Patent' of working of Prague's first French Patent dated 18 Dec 1874 from Standen's. Serial number is 161,009 and corresponds to American Pat 295,454. Taken Dec 11 1884.

146<sup>th</sup> Taylor Co. Co.

July 8<sup>th</sup> 1886

Meeting of Directors - 2% dividend  
Commemoration for Taylor for extra work  
etc.

147<sup>th</sup> Decided to put on a fire man in the new  
covering department to organize it. Shall  
adventure for one.

148<sup>th</sup> Compa's machine



Making this on a 1/2 in. 1/2 order  
Dyer & Seely to take a patent  
for it.

149<sup>th</sup> Edison E. Light Co. moved to office in  
167 Broad St. 2nd floor

150<sup>th</sup> Univis Edison Mfg. Co. July 10<sup>th</sup> 1886

Had a meeting with Bergmann & Hirschmann  
in regard to Klein being on board of directors  
after we had agreed that Liver should replace  
him. Got the resignation of Klein & the  
understanding that Liver should go on a  
gain.

151<sup>st</sup> The C. M. H.

McLean returned his  
morning from a visit to Samratkin,  
Lumbury, Bedford & Haverhill, Pa.

152<sup>nd</sup> Callender Cable Co.

July 11<sup>th</sup> 1886

Had a meeting with Edison & himself on  
talking up the Callender Cable & selling  
it for feeders. Callender offers to give  
us 10% better than to any one else & not  
to bid on Edison Electric work. Edison  
wanted more guarantees for unsold

Insist to ask for more substantial guarantee  
to guard us against possible failure

1533 Money loan to C. M. W.

After promise to loan the Com. W. \$25,000  
out of the \$45,000 he has loaned us when  
we pay him back by raising a mort-  
gage on the Schenck & Co. buildings -

1541 Salaries of M. C. M. W.

Week end July 5. 3 PM.

\$4,585

7600

1553 Callender Cable

July 15 1886

In an interview today with Lussell the C  
agreed to give as security for their good working  
of their cable a guarantee of their Company  
accompanied by a deposit of 20% of the  
value of the contract in good R & securities  
in the hands of third parties pay Emory

156 M. C. M. W.

July 16 1886

Stocking M. C. M. W. today.

157 Longue patents in France

July 17 1886

I gave C. M. W. \$1,000 note at 3 month in  
payment of what he paid for patents in  
France. He agrees to assign 1/2 his right  
there to us when he gets a specific assign-  
ment for France from Longue.

158 Western Station

July 19 1886

We had a meeting at 16 Broad St. & discuss

The Dynamics and Conductors for new  
district. Chas. J. Chummo, Satchel  
Patt, Andrews, Russell were present  
Decided to have 125 volts & 500 amperes  
at the dynamo

Edison proposed leaving off some steel  
altogether & running feeders to heavy  
cables & then making mains at each  
place. Same size as feeders, other  
mains of less size

There was much discussion on as to whether  
it is advisable to use cables as feeders  
Chas. J. Chummo says it is better to have  
no joints & if a pick cut into one cable  
it is only one cable that is damaged.

Edison maintained that the cable  
while being electrically superior to  
tubes cannot be as good & well protec-  
ted from mechanical injury. He illustra-  
ted his remarks by showing that all  
faults to our underground system were  
mechanical and said that unless you  
draw the cable through an iron tube it  
would not be so satisfactory as an tube.

I claim that in large cities like N.Y.  
it is difficult to lay cables of large  
diameter and long lengths owing to  
so many other pipes being now in  
the ground

159. Apparatus.

July 21, 1886

We are compelled to bind and japen our apparatus after the first layer is on and we are now doing this. The binding is afterward made of silk tape & three thickness of paper (colored) is past between top and bottom paper.

160. Long Beach.

July 26, 1886

Came in today from Long Beach. Rosa Emma Rosa & I have been here since June 11<sup>th</sup>.

161. Union Station.

Meeting today of C. &amp; C.

Light & B. engines & American engines and boilers in Union Station. Emery was here also. Got here late.

Low speed condensing engines were advocated. The picking in the light & is advocated by making very heavy fly-wheels.

162. Dynamo.

Finished new switch board for 12 dynamo & commenced to make them for Central Station machine, now.

163. Edison United Light Co.

July 27, 1886

Meeting of directors today. Edg. Hutchinson, Bergman, Upham & B. A. Phelps present also Secretary Klein. Resolved and adopted Hutchinsons plan of contract with Edg. & method of doing wiring by Roll Bar. taking job & sharing profits equally with E. U. Mfg. Co.

Edg. informed the meeting that the Deol. Co. would throw off the first cost of the lamp. This profit on each lamp is just metalthen.  
 Payment of the made by note at 90 days without interest endorsed by the other two companies, that is a note given to the B. M. W. is endorsed by B & C & M. C. Lamp Co. & vice versa.

164. Prague Victor Stock

Prague told me that he had sold 50 shares today at \$325.

165. B. M. W. Finance.

July 29<sup>th</sup> 1886

Saw Schwarzwalder from Germania Bank this morning for loan of \$15,000 \$10,000 now and \$5,000 15 Aug. if we want it. Offered note of the B. M. W. with J. A. C. endorsement. He said all right, we make note & present it tomorrow & it would be acted on.

Went out and got J. A. C. endorsement.

166. F. K. Upton died with a triple.

167. Lamp.

Edison said some today that he had found out by spectroscope that vapour of mercury condensed on the inside of the lamp when cold & apparently there was a very high vacuum, but when turned it into vapour again & caused the vacuum to be exceedingly low so that there was a good medium for the carrying action. He said he had

been able to arrest the mercury by putting a water jacket round the tube leading to the lamp & freezing same continually. Any odor of mercury passing towards the lamp would be caught & immediately deposited as mercury on sides of glass.

168. Finance Com. m.

July 25 1886

Guamanga Bank discounted \$10,000 for the Com m today -

169. Consolidation of Shops

Chas. spoke some today about consolidation of shops. He said they had been talking the thing over at S.M.T.C. and he suggested by a means of bringing upon it which well of consolidation that we try to work it so that Atamp B could not get the contract it wants but that the same thing should be given to the consolidated shops.

170. Armature fault.

Found out a big 'un' in japanning. For some time past we have noticed a number of armatures have heated up above 150°C. We have generally supposed have heated because of poor insulation of bolts, but I find that in the heating furnace the above get red hot and the armatures that are close but must get hotter than the others in the hot room, the



is so bad that I occasionally carbonize the paper between the plates, thus burning the plates & heat abnormally. Have given orders that they shall not go in oven at all but receive three coats of quick drying varnish before being wound.

171. <sup>1</sup> Schenectady Station. Aug. 3<sup>rd</sup> 1886.  
Spent the day here - visited Westinghouse & Schenectady Loco. Works. - Our work progressing rapidly.

172. <sup>1</sup> Agreed on 'heads of contract' for contract between Callender & Co. & the Edison Machine Works.

173. <sup>1</sup> Edison Station. Aug. 4 1886.  
We had a meeting w. C. H. V's office & decided on the engine and boiler the work in the 26<sup>th</sup> Street Edison Station. Emory and Edison were here. I was waited after lunch discussion that for this station we had better stick to high pressure fast engine (not exceeding 200 horse) and only two dynamos on an engine instead of four as proposed.

174. <sup>1</sup> Callender Contract.  
Edison read over the contract and initialed it for the C. M. W.

175. <sup>1</sup> R. Dyname. Aug. 5 1886.  
We have been having lots of trouble with R. armatures lately and I have

that they have evidently got off in the winding somehow. The R is 44 blocks. t. is one wire 3 times around and then one wire four times around. It should be wound so: ~~100-100-100~~ namely 3, 4, 3, 4 etc. instead of which it has been the habit to do so:

~~100-100-100~~ which makes the measurement show 3, 3, 4, 4 at opposite parts of the armature all between showing alternately 3, 4. The effect of this on an armature is to file out the commutator similar to a bad connection between the wire and cup. I have ordered all R<sup>o</sup> 44 div. that come in to have top layer examined & if necessary changed at our expense.

176: Wire coming

Got our first order today for outside wire coming. 5000 yds. of Flaxed Cotton flexible from Bergmann.

177: Cable orders

Aug. 6 1896  
Met C.H.G., Chinnock, & Carter in E.H.P.'s office. They were discussing the merits of our armored cable sample and the opinion of all was that the up-town Illinois feeders should be of this style.

178: Hand not done

Saw Mr. Cook today about payments on the holdville. He acknowledged

his liability as far as he had signed this contract and said as far as he would have it fixed up -

119. Kate Schorn Aug. 7, 1886

Took family to Taylor House Lake Schorn N. Y. & stayed with them 9<sup>th</sup> & 10<sup>th</sup>. Arriving home 11<sup>th</sup> P.M.

120. Dr. J. G. C. Aug. 11, 1886

Meeting of Schorn Ass. of Dr. C. at Eng. Beach Hotel. Sent them to represent the C. M. N.

121. Met Mr. Brewster of Rochester & spent the evening with him at Hoffman House. Dined on Rochester at 3 days for 4<sup>th</sup> 21<sup>st</sup> at his request. They agree -

122. Callender Contract Aug. 12, 1886

Drusi, J. Druse & Callender met at Drusi's home to consider contract and talk over its workings.

123. Patent Received my French patent for immature crickets from Sp. & Chap.

124. Schorn Lake Aug. 16, 1886

Went up on night of 15<sup>th</sup> & arrived back 8 a.m. the morning.

125. Callender Contract Aug. 17, 1886

I sent to the Callender Co. the heads of agreement in the contract to be made by & between the C. M. N. & the C. M. N.

116.5 Elm St.

Aug 19, 1886

Belgiman and Hutchinson visited  
Bentley's Shop & see what was wanted  
for repairing armature. I went with  
them.

117.5 Fishing

Aug 22, 1886

in Schuon Lake this morning caught  
a Bass 2 1/2 lb. Mr. Harrison and Edman  
went up with me on the night of the 20<sup>th</sup>  
and intend spending a week.

118.5 Edison's House

Aug 25, 1886

Spent the evening at Edison's House at  
Orange. Family away - Inuit here -

119.5 New dynamo

Have started to design a  
new dynamo for cheapness. Edison wants  
one to go into motors and  
planting machines.



120.5 Dynamo 250 Volts 250 Amps

Regular 250 armature, field etc + wind on  
magnets 440 lb. 76 (AMG) (065") sea on coal  
case. This single post be changed to 77  
after test of it.

Armature 13" diam., 24.5" long,  
12.5" at back.

Winding 9 "0.1 (155") twice round  
and 57 blocks. Partial winding.

251.



1921 Edison Hypokuan Machine.

Test made about Jan 30, 1922.

Eng. h. 56" x 56" x 62" high. Weight 3574<sup>9</sup>

Arm 40 bars, 55 coils, 200 ampere,

Magnet 1.52 ohm. Arm Res. .009 ohm.

Speed 900 — Elec. eff. 93.1%

Loss in magnet: 2.4% — Arm 4.6%

Heat: — — — — —

After 1 hour 17°c 33°c 46°c

" 12 " 20°c 33°c 84°c

" 24 " 19°c 33°c 46°c

Arm test with 275 ampere

Total output 13,450 Watts

Weight per Watt 26 lb.

1922

Sept. 7, 1926

Just returned from my vacation at  
the Adirondacks Aug. 27. On 27<sup>th</sup> we  
took a passage from Johnson Lake  
& visited Bede's, Lake Placid,  
Lower Saranac, Au Lake, Mass,  
Burlington & Elizabethtown, in all  
8 days.

1923 Spokane French patents.

Receipts for 2<sup>nd</sup> annuities 3 to 7.

Receipts for " " 9 and 11.

Received from B/Dr. & Leedy —

194<sup>3</sup> LocationSept 14<sup>th</sup> 1886

Spent 11, 12 & 13 as usual at Lehman Lake. Sunday we all went to Pyramid Lake - Mrs. C. H. G. & children went up also with me.

195<sup>3</sup> Edison U. Mfg Co.

Meeting of board of directors - Business -  
 Call g. 2 5%. ordered - Advancing -  
 E. U. Mfg Co. have New York vicinity ex-  
 clusively for sale of Bergman pictures -  
 Also all isolated business sales - W. C.  
 Quinlan was a agent for Kammur must  
 not be appointed until Hutchinson has  
 seen him - Hutchinson authorized to  
 Mrs. Hubel -

196<sup>3</sup> Sprague Motors

Received order 200 ahead & build 10 H.P.  
 motor & drawings - He furnishes  
 castings

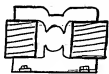
197<sup>3</sup> Introduced to E. U. Arthur's Club.  
Wright for membership.

198<sup>3</sup> Sprague Motor Prices

21	1/2 H.P.	7.35	F. O. B. New York
3	1 1/2 "	240	incl. 30 days or 2 1/2 "
6	3 "	350	10 days
10	5 "	500	free price include
15	7 1/2 "	650	regulators.
20	10 "	800	

1905 Sorague 10 HP motor

Received order to make one from his  
Castings.



Style of Castings 2-1-

2005 Green I left off the Green on Aug.  
4 & have never felt the want of  
it since but on occasion Nov. 1892. O.S.

2015 Sorague R.R. Motor Sept 16 1886  
Sorague tested one of the motors for R.R.  
It has an armature diam. and iron  
in the field. Rick. He stored the  
first armature.

2025 Schwan Lake Sept 22. 1886  
Got back from Schwan Lake for good.  
O.S. has spent three days here &  
both families came together.

2035 Sorague R.R. motor  
They are getting the truck fitted with  
the two motors for trial tomorrow the  
23<sup>rd</sup>.

2045 Rockledge Central Station  
Thurs. left for Rockledge tonight & in  
spite of the work & as what can be done  
in Detroit.

205. E. & L. Co.

Sept 23 1886

Making today. Decided to immediately  
appoint addendum animal & vigorously  
present an patent suit.

206. Compound dynamo.

The experiment that was spoken of on  
page 78 as 106 was tried today. It was  
the one shown in fig 2. - It worked perfectly  
by giving no spark whatever variation of  
load occurred.

207. E. & L. Co. New Station

The addition to the Pearl St. Station was  
made today and Waller is here to  
start the dynamo & have them running  
satisfactorily. They will run tomorrow.

208. R. T. K. motor

Paragon made a test today with the new  
motor & after a few runs he burnt out  
the resistance box.

209. Hoare.

Sept 25 1886

All went to A. C. Goodwin's in "Cotta Jack  
Boothland".

210. Silver service.

Boyle at L'Amour's. Sept.

211. Transformers

Sept 26 1886

Waller & I signed a contract on  
the 22nd. Henry E. Waller and  
J. Cha. Satchel to whom Henry E.  
Waller assigns a half interest in  
patent of Henry agree to divide all  
profit that may accrue to either one.



in the other on sale of patent relating  
to Combined Generator and motor  
Application for which was filed May 11<sup>th</sup>  
1886 or on any apparatus made  
under it  
Oct 31 1886

212<sup>nd</sup> Shaping Motors

Order to make two  $\frac{1}{2}$  H.P. & have them  
done by Oct 15. Same style as the  
3 H.P.

Oct 4 1886

213<sup>th</sup> Walter McCrilly. Went to hear him  
speak. Subject the Cause of  
Inebriety.

214<sup>th</sup> Moving

Oct 6<sup>th</sup> 1886

We moved the Shaping Department  
today to Schenectady N.Y.  
Have contracts for new buildings up  
here.

215<sup>th</sup> Compound Dynamics

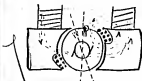
In continuation of our experiments men-  
tioned at 106 we have found out the  
following: It is not sufficient to demagnetize  
the arm of the armature & keep a non-  
sparking power, as by far the larger part  
of the spark comes from self-induction.

It is proved by running an  
armature alone & passing a cur-  
rent equal to that used through it at the  
same time. This sparked terribly. If a  
coil is passing under a brush set-

at one point it must have no current circulating in it & the next instant it has to take a strong current. This is entirely independent of the other things that go to make a machine spark, and is one of the main troubles with such very strong fields. It is one of the most important causes.

When therefore we made the coil like this, to go round the outside of the armature we found that it had to be placed in a different position from what it would be if it was only intended to set the pole back after its distortion in the direction of rotation. We found it must not only set back the pole but it must furnish itself the line of force

necessary to cut the neutral coil & make it generate current while going under the change of polarity. We find then that the actual neutral point is a little behind the non-sparking point always. We last figure shows how the coil works, the regular line of force are passing from left to right, & the coil picks up new lines in same direction as the others but around itself in such a manner that they cut



the wire that is under the brush and generate sufficient current in it to prevent the brush from sparking

216. Chen

Oct. 4, 1896

Bad Chen and his partner. He told in a story of J. O. C. that I have not heard before. Samuel Chen had a daughter married & living in Sandusky, O. & Sam. at 122 Main had been there. His father went to fetch him home & what they had quite a lot of boxes & crates to ship home with him. They were at the station & all the goods were on the platform. While they were engaged Tom Hunted round and found a marking for brush & went & directed the packages in a firm & plain manner in fact everyone was astonished at his manner. That the station master who knew had said he had not a man around the place that could do it so well & offered him (if he would let him stay) to pay him \$10 per month & board him.

217. C. V. King, C.

Oct. 5, 1896

At a meeting today the policy of the C. towards agent was agreed to be changed giving him 10% of all sale no matter what. Since they are then exceedingly low sales are to be made the agent always & small.

218. Edison's Experiment

Oct 9. 1886

Armature made in principle of 66  
given me last May by Edison was tried  
today. It was a <sup>1/2</sup> armature. Work of  
our field it showed is bad that we  
could not run it. We made an-



other field that allowed  
more than 1/2 of the dis-  
cussing the piece at  
top and bottom was-

It ran about like a "S" regular but the  
rotor only being about 80 instead of  
120. We ran both ways but it was  
just the same

219. Armatures.

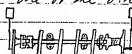
Oct 10. 1886

In 218 I spoke of an armature  
revolving & a current  
being passed through  
it. The field magnet  
being employed. I no-  
ticed that the brushes sparked badly.  
I have drawn certain spaces for it which  
I think were not all. We will be seen  
from the diagram the armature was  
a strongly magnetized & at the point  
where the brushes crossed the pole is  
strong & the wire is cutting the changing  
line of force



221. Reading Out Station Oct 14 1896

Visited this station today. 2 "20" and  
2 "10" driven by side engines one to  
each pair. One light plant also  
putting up driven by ten side  
engines one at each end of shaft  
with a coupling clutch. 8 run when  
one or the other. And move when one  
or other in wheel in



motion.  
Very fine station. Just  
ready to start. But not meant to press.  
+ Not Right to start.

221. Wilkesham Station Oct 15<sup>th</sup> 1896

Visited this station today. 4 "20" + 2  
"10" driven by side engines. Large  
one lamp plant besides.  
New Piers finished

222. Albany Oct 16 1896

U.S. Express Co plant. 1 "12" run by  
a safety power 2x12 50 H.P. This  
plant runs the 2x14 depot + will  
like by get the 2x14 + 11x11 depot.

223. West Passaic R.R. of Albany

1. machine "12" + 59 working  
very satisfactory. Can be excellent  
condition. Run from counter shaft.

224. Myers Bay Road Albany

2 "10" driven by Birmingham R.R.  
engines 12x18 + 2 fuel.

good condition. The ammations had  
been burnt out here but could find  
out nothing relative to how it was  
done. Specimens are had all the  
good.

225. Schemetady Oct 16 1896.  
Allen & I visited Schemetady  
all tools for Hasting department  
ready & working.

226. Banks Oct 17<sup>th</sup> 1896.  
Hunt & saw the stores on dismount.

227. C. & Light Co.  
Had an interview with J. H. Hasting  
& Kail. Subject: How to remedy the  
burn out which occur in under  
ground lighting. He decided that the  
Machine Works must have a work  
& put whatever current in that  
they want to test the underground  
system.

228. French patents Oct 21<sup>st</sup> 1896.  
Recd from Syer and Kelley and  
French patent for insulating & building  
up commutators.

229. Edison Co.  
I resigned today from the committee  
of the Edison Co. for isolated lighting.  
It is intended to give this Co. work the  
Edison Electric Light Co. and in order  
to do this the directors should not be

the same in each. The number was also changed to 5 instead of 12.

### 230. Sprague Motor

Oct 22, 1886

Meeting. Kluken, Chas., Sugman, L.A. & myself. It was agreed that Est. P. would accept the following for the future and endeavor to make Sprague accept the same: - The C. M. M. Co. has all the ~~subcommencing~~ manufacturing. Sprague has an experimental shop here at New York. It is furnished him with everything in the shape of material and finished parts at actual cost without any profit at all & so

### 231. Edison Electric Light Co.

At a meeting today we adopted the report and sent it to Stockholders meeting.

### 232. Amateur experiment

We tried the experiment on 20<sup>th</sup> of Oct. 1886 to find out how much spark was due

to self induction. The armature was run at ordinary speed and a full current passed through. (No field on this at all). Another coil was run round outside fixed & the same current passed through it in the opposite direction. This coil had the same number of ampere turns on it as the armature and was placed as near to the armature as possible. Then you neutralized the magnetism

or even reversed it the spark was only  
circumvented by about one half.

### 233. Rochester Station

This station was accepted from us by  
the local embassy today.

### 234. New Armature

Oct 29 1886

Edison proposed an armature as follows:  
Put a resistance of German silver wire in  
between the coil and the bar say equal to  
the resistance of the armature. This will  
make the total armature more uneconom-  
ical but it will reduce the heating effect  
of short circuiting each coil to a minimum.  
It will also reduce the sparking due to the  
current generated in the coil which ought  
to be at the neutral point. Am making  
an armature this way.

### 235. Edison Electric Light Co. Oct 27 1886

First meeting of the new board of  
directors today.

The incorporators of the Edison Electric Light Company  
and members at No. 10 Broadway, sat, after approving the  
initial report, chose the following trustees for the working  
board: Henry W. Harkins, Charles B. Harkins, Thomas G. Harkins,  
C. C. Harkins, G. H. Carter, Thomas Harkins, J. W. Harkins,  
T. A. Harkins, A. Foster Harkins, F. H. Harkins, E. H. Harkins,  
and G. Harkins. Secretary: Harkins.

### 236

#### TRANSIT OF THE PLANET MERCURY

A single passenger car to the bridge and tunnel, be-  
longing to the New York, New Haven and Hartford  
Railroad, will be used on the 29th inst. for the  
purpose of observing the transit of the planet Mercury  
across the sun's disk. The car will be loaded with  
astronomical instruments and will be accompanied  
by a number of astronomers and assistants. The  
transit will be observed from the bridge and tunnel  
at New York City.

"Pickens" Oct 27



237. Schneestady

not up to his up here - stuck in a  
big m. River so had very little time.

238. Porter Eugene

He Ben H. makes a contract with Cha-  
T. Porter. Machine work - La the hands  
of J. C. Tomlinson below up.

239. He Ben H.

Sales for 6 months

April -	\$41,265.28
May	24,789.49
June	42,065.20
July	46,984.00
Aug.	57,998.66
Sept.	65,443.11
	\$310,545.74

Average: -

\$51,754.60

240. Orin Husking Machine

Nov 4/1886

Visited Geo. Edwards Monday and today  
to see the Orin Husker at work

241. Pen of Parker. (Edison's)

Made a #4 armature for S.A.C. in which  
each loop before it reached  
the commutator had a  
resistance between it and  
the commutator of about  
the total resistance of the armature, then  
making a high resistance instead of a  
short circuit when closed by the brush.  
Then running it with cord. This was always  
a short when a heavy change of load



but it did not seem to be a cutting spark.  
I am trying the following size of it is  
better than the ordinary machine -  
A regular  $\frac{1}{4}$  must be run and every  
15 minutes the load must be varied  
say 20, 50, 100 amp and so on for  
two hours changing and setting the  
brushes as soon as convenient after change  
of load - then see how this cuts the  
commutator - afterwards take the  
Special Edson  $\frac{1}{4}$  and do the same  
with this but set the brushes permanently  
in the offset on both.

242. Underground Cond.

Nov 6 1896

Met Mr McQuinn at shop & made a  
similar arrangement in Licking that  
we made with Marx - that is always  
5% of our price for them -

243. Upton

Left for France today with full  
power & saw to some arrangement  
with the French Companies

244. Corn husker

Arranged with Mr Haselstran & have  
the Miller Corn husker to our shop du-  
ring the experiments

245. Transformer patent

Received from Byer and Lang Oct 25  
the patent for transformer of  $\frac{1}{2}$  volt  
assigned on half to me. 50% <sup>to me</sup>

206- Schenectady

Nov. 8<sup>th</sup> 1906.

Now up today - Building progressing - Working  
 progressing slowly - returned at night  
 206- to C. M. N. Statement for Oct 1<sup>st</sup>

		Cost payable.	\$229,751.96
\$96,789.69		" Materials	
197,417.12		Labor and Materials	
33,304.07		Raw Materials	
7,884.00		Cash.	
225,303.79		Mach. & Tool.	
4,717.95		Wm. Ins. Loh & Off.	
4,649.47		Spurn. & Fuel	
23,353.09		Patent &c	
761.64		Mining &c	
2,929.57		Horse & Truck	
		Int. & Advances.	922.65
27,450.00		" " Stock &c	
		" " Loan &c @ 6%	2500.00
237.85		C. V. Mfg. & Engineering	
2570.00		" " " Stock &c	
		Profit & Loss	65015.13
59,727.21		Real Estate & New Bldg.	
11,462.45		2849 ans Standardizing	
4,957.26		Insurance &c.	
138,400.00		Goodwill, Patent, etc	
		Capital &c	750,000.00
		P. & Light & Power Company	33,333.33
9,824.01		Municipal Light & Co.	
1,081,593.07			1,081,593.07

248<sup>2</sup> Patent

Nov. 15 1886

Receipts from Dyer Kelly, assignment of Patent on  
Mellin's Lactogen Patent "No. 1777 filed May 1886."

249<sup>2</sup>

Nov. 21 1886

Slagov & K. W. Weston Co.

Meeting of Stockholders today - Decided  
 to increase Capital stock from \$100,000 to  
 \$1,000,000. Four hundred thousand to be  
 issued to Slagov for contract for 5 years  
 and he to divide it 50% with present  
 holders of patent. Present, J. C. Lounsbury,  
 E. H. Slagov, Ruff-Saunders, Dr. Ansell,  
 Prof. & C. B.

250<sup>2</sup> N. & C. Light Co.

Result went to Chicago Friday  
 morning in regard to the Stock Yard  
 plants with power to drop our price  
 below the shop profit. He gave  
 them 20% below bid for first two  
 installations

251<sup>2</sup> N. & C. Contract

Nov. 24 1886

Edison, J. Samuel, Porter, & Lounsbury  
 met at Edison's laboratory at East  
 Newark. Discussed Porter Contract  
 & came to a conclusion satisfactory  
 to all concerned. Lounsbury instructed  
 to make new drafts of same and  
 get ready for signature

252. Thanksgiving

Nov. 25. 1886

Shop all day. Ed & J's house at night.  
 Bought candy. Airt 20 lbs today.

253. French patents:

I wrote Lipton on Nov 23 & sent him my  
 patents for Communicator and for circula-  
 ting annuities and told him to sell them  
 for anything that he could get and  
 above the patent cost. And I would divide  
 equally with him whatever was left  
 after deducting \$250 for the two.

254. Construction Co.

Nov. 25. 1886

C. H. J. proposed a construction Co. in which  
 J. S. Morgan is president. \$1,000,000 Capital  
 with a contract with Light Co.  
 Co. formed on a basis of 50% Water  
 30% to Light Co. and 20% to the Co.  
 C.

255. Experimenting

Dec 1. 1886

A. C. B. at shop this morning. Told  
 me about his experiments and  
 wanted me to arrange to do them for  
 him, & leave C. H. J. as much as  
 possible to itself & come with him.  
 But I told him would be fatal at present  
 we must try and get them out as we  
 are.

206<sup>th</sup> Meeting of Directors of C.M.R. Dec. 3. 1886.

At Edison's House. Dinner made  
easy & pleasant. Ratchels made nice  
dinner & sent my. - Ratchels the buying  
of Schenck's day ship - the making of  
Hague & Callender contracts - the  
contract - authorizing the disposing of  
William's bugl property - etc etc etc

207<sup>th</sup> C.M.R.

Dec. 4<sup>th</sup> 1886

Law isolated Co. Caracas Co. United Co.  
I decided to move to Schenck's day now  
just as quick as it could be done -  
He shall therefore buy and have the  
whole thing moved and running here  
by Jan 1. 1887.

208<sup>th</sup> The C. P. McCoy Co.

Dec. 5<sup>th</sup> 1886

Met Johnson, Carter and Vail at Thomas  
house & decided that we must have  
better service and more of it out of Mr  
Hutchinson - He difficulty at present  
is that it does not take satisfaction  
enough to go ahead - He is mostly  
on fence (although I did not think that  
he needed much pushing) we ought  
to meet Spencer and lay out the policy  
- direct Mr H & follow it out

209<sup>th</sup> The C. P. McCoy Co.

Dec. 5<sup>th</sup> 1886

Carters goes to Buffalo tonight but  
Carters & my and get Galt (who must  
have been there) & buy out the H. C. C. Co.

at a reasonable price and so get their territory back into the hands of the E. Light

260: Combs

See 10<sup>th</sup> 1886

Signed bond for making R.O. Eastern house plant with E.H.J., Magus, Bergman, Chumuck

261: B. E. Cobb Co.

Dec 9<sup>th</sup> 1886

Attended meeting stockholders of B.E.L.C. and voted for consolidation with the B.C. for last night. Vote unanimous

262: B. U. Miff Co.

Dec 10<sup>th</sup> 1886

Met. Hutchinson, Bergman, and E.H.J. at 36<sup>th</sup> St. to discuss the policy of the B. U. Miff Co. Resolved to meet each Friday night until the affairs of the B. Co. are in a better condition.

263: Isolated Co.

At a meeting he week it was unanimously voted by the stockholders to combine with the Edison Electric Light Co.

264: B. U. Miff Co.

Dec 16 1886

Meeting to discuss the unsettled accounts of the United Co. & the Isolated Co.

Ed. Miff Co.

Dec 17 1886

Meeting to meet the agents to arrange matters which they wish altered. Made many amendments & Richard, percentage to 16% instead of 12% as now. Appointed & introduced to them Mr. Connel the General Agent.

260 The B. & M. M.C.

14. Dec 19. 1886

Moved the office furniture books etc etc  
by freight by express to Schenectady. From  
this day the business is done from there

261 Mailed Father's

Dec 21<sup>st</sup> 1886

262

Edwin, William & Stephen at my house  
talking up experiments

263

Dec 22<sup>nd</sup> 1886

Bought 25 B. & M. Light C. stock at \$30  
L. A. B. gave me 50 International R. W.  
Abstract C. stock

264

Dec 24. 1886

Went to Bridgeport and Hartford today  
called on Billings and Spencer & talked  
shop for a while for us

265

S. Dec. 28<sup>th</sup> 1886.

Schenectady N. Y. N. & Thursday. 28<sup>th</sup>

271 Moving

Dec 20. 1886.

Stopped all work at Goetz's & ship and  
also at 11 & 24 Bridge St. Brooklyn on Sunday  
and returned everything back to Schenectady  
Goetz's & ship almost empty now

272

Schenectady ship is now running and we  
are beginning to turn out work. On Jan 2<sup>nd</sup>  
we shall have 5 "1 & 2" 24" diameters ready  
to test - New Balance & Wilson taken a deliv-  
ered 7. will be put up immediately - Plans  
in up and will be ready from Jan 2<sup>nd</sup>





276v

176 Statement of assets Dec 31<sup>st</sup> 1886.

	(Cash in 11 Ward Bank		\$21.67
	" " D. M. & Co		189.54
	" " Oceanic Savings Bank		555.79
	" " Newark Savings Inst N.Y.		
18	4 1/2% Gov. bonds, at 110 1/2		198.45 00
2	4 1/2% " " at 127 1/2		284.20
	(Cash due in form L. & M. Co.		134.4 1/2
	" " " " L. & M. Co.		185.00
	" " " " H. M. Lion		416.46
	Notes coming due during next 4 m.		1,173.97
	Flouriture		73.50 00
	Books.		531.37
	Arms & Lot at Mauds Park N.Y.		3500.00
	1 Lot at Mauds Park N.Y.		300.00
	3 Lots 2 and 3 N. & C. Co Newark.		900.00
1	Arms & Lot 144 Mauds Park Newark.		378.02
	4 lots at Port Anne		250.00
257	Arms & C. Light & Dock at 140		3599.00
370	Edison & Light & of Cough 75		1.50
	Land at -		
35	C. & S. Elleg & of New York 100		3580.00
54	C. & S. for East Light at 105		5670.00
1063	Comp. L. B. Flour at 1		1663.00
	Cognac & Brandy at 510		250.00
10	Wheat & Oats at 100		1000.00
11	for Am. & Ind. Co at 100		1000.00
	Ind. and Annual & at 100-100		1212.00
			123,317.43

	Carried forward	1223.14 43
204	E. Railway Co of U.S. at \$75	3060 00
3	And of Edison & Light Co of N.Y.	
	Sum at \$1000	1500 00
26	Shaw M & Co at \$10	250 00
30	" Niagara P & M Co at \$500	25000 00
	Niagara Water in France money	1506 06
	expended to date	
5	Shaw Edison Lamp Co \$3000	15000 00
1358	" No Edison M. Works \$100	13500 00
100	" Bergman T Co at \$100	14000 00
73	" L. Taylor and Co at \$100	7300 00
100	" Ore Milling Co at \$	100 00
1475	" Niagara Mining Co at \$	1475 00
5	" Niagara Canal at	262 70
28	" Edison Est of Niagara at	00
100	" Pulverizer Co at	137 23
58	" Aluminum Co at	000
1500	" Niagara P & M mining at	000
5	" Monograph Co at \$	500
50	" International P & T Telegraph Co at	700 00
	Patent Transformer	90 65
	Electroplate	115 56
	" U.S. Accumulator	258 79
	Accumulator in France	285 14
	Accumulator in "	
	" " " Canada	
		322,411 06

Carried forward	332,479.56
Patent: Accumulator in Canada	
" " Compound Hydrant	120 00
Due from B. P. Light Co as 10% of what B. P. is entitled to	6000 00
Telephone Royalty received in the U.S.	00 00
Telephone Royalty received in Canada	400 00
Patent in Canada - Johnson's Lamp	500 00
Black	180 00
Due from Lamp Co as dividend	250 00
" " Lamp Co "	219 00
	<u>340,139.56</u>
Debt	
Mortgage on Mendocino Park House	3500 00

274. Edison

Jan. 6<sup>th</sup> 1887.  
Went up to see Edison tonight. He is very sick  
with fluency but is progressing favorably.

275. the C. M. R.

Got to Bangor up Jan 5<sup>th</sup> - Crane started  
dring work same day - Shall leave out about  
4,000 worth of work in first week in Jan.

276. 

Jan 8 1887.  
- Sick in bed all day with a bad cold -

280. Charitable Marble Co

Jan 10 1887

RECEIVED  
A number of specimens of New York and Essex Island, in  
cluding C. M. Marble, Robert Brown, C. M. Brown and  
Vernon Brown, are well known in the marble industry and  
have been a long time in the hands of the Marble  
Marble Co. and the Marble Co. The marble is now  
being used in the Marble Co. and the Marble Co.

281. Up to News/na

Meeting - dividend - Extra corp dividend to  
New York stockholders for earnings -

282. Propose C. M. T. M. Co.

Agenda of invitation  
a meeting of board of directors at which it  
was decided to sell \$100,000 stock at 10¢ &  
penn - as the law would not allow the sale at  
a low figure - C. M. T. M. Co. to the Company now  
patent & they have been the stock over as a bonus  
to the present buyers

283. Edison arrived this morning from Bangor284. Edison still out sick at Bangor -

285. Hallard collection pictures at Christmas Mass (Bro.)  
65 Return 24th 1887 -

286. Made Will -

Jan 12 1887

204. Geo Place & Co.Jan 13<sup>th</sup> 1877.

Attended a meeting of cred/ors at 121 Chambers  
St. Evans, Remond, Fro, Satchel -

Jan 16<sup>th</sup> 1877

Attended meetings of above again & had  
assurance of Mr Van Remond that he would  
assume liability.

201. C. B. L. & G. George & Co.Jan 17<sup>th</sup> 1877.

Held a meeting A. L. Cullum, Dr, L. Small, &  
myself, Upton & Carter present, C. B. L. made a  
proposition to sell 5000 pounds share. (of which we  
have 1700 for 31000 then pay bonds at \$688 4  
300 cash & a 10 year bond for 584 leaving the  
5700 pounds share as security for the bonds.  
This I feel quite sure will go through - Carter took  
to read for his claim against the Company.

214. J. M. V. C.Jan 18<sup>th</sup> 1877.

Delivered my receipt of French share to J. M. V. C.  
and authorized them to sell at 91% & round  
the money here.

Delivered over to Orin. my three bonds of  
C. B. L. & G. George

190. Orin improving slightly all the time but still  
a very sick man. He doctors hope to send him  
to Florida first week in February.

201. Johnson & Co moved at Pittslands tonight201. Beagle 35 light street at 1400.

203. Geo Place & Co after all are waiting Van Remond  
would make accept our proposition so make  
one himself. I put our matters in Lindeman's hands.

294. Hayler Trust Co.

Jan 21, 1897

Hayler, Meun, and I decided to turn Hayler and Co. as a concern to stand on its own bottom. Put in a new capital, take out side work, raise capital \$50,000, pay dividend to stockholders of stock to represent the money invested, & put rest in treasury to be sold as directors shall decide.

295. Chadbourne

Went to see Chadbourne about my health.

Johnson very sick & to have operation for his pile.

296.

Jan 26, 1897

Edwin Lamb Co.

All hands started work yesterday

THE UNIVERSITY OF THE STATE OF NEW YORK  
IN SENATE  
JANUARY 27, 1897  
REPORT OF THE COMMISSIONER OF THE LAND OFFICE  
IN RESPONSE TO RESOLUTION PASSED MAY 1, 1896  
AND A RESOLUTION PASSED IN THE SENATE  
JANUARY 1, 1897

297. United Co.

Jan 27, 1897

Meeting at Johnson's house to discuss relative positions of Hutchinson and Abbott. Also what shall be done with the Western Union territory that has just been turned over to us by the Light Co.

298. Lighting Department of Light Co.

C. H. J. formulated a plan to submit to the Light Co. for a special lighting and standard grip shop & Co.

the first district to get lots of current etc &  
be where the officers of the Light Br can easily  
get at it.

299.5 Grocery Store Shop

Jan 28 1887

[illegible]

3001 L.A.B. Visited L.A.B. who is now getting  
better. I sit up all day. - settled on probable  
increase of share of Mum & Co. on same end-  
basis as I think it likely they would make  
namely double the stock, pay a 50% stock  
dividend. If present holders, sell 25% of total  
at about 150, this would give the whole  
stock about 13% cash dividend. We are above  
\$225,000 in the Treasury - I am not sure that  
this is the project. But think so. - The Western C.  
right has also got to be taken at some time else  
the well needs to be done

301<sup>2</sup> Hu. P. M. W.

Jan 29<sup>th</sup> 1886.

Had to keep dinner out by getting two of the entries of Robert to discontinue and giving personal security for it. Robert from Cole & have it arranged it Monday. Jan 31. Put this & put it to be over of M R at this bank. Put up a security & wrote for 1891. of Robert C and 1st share of Light Street



303<sup>d</sup> Shaw Commission Jan 29<sup>th</sup> 1887

ST. PHAEDRUS OF AUSTIN MARQUETTE OF AUSTIN  
ST. PHAEDRUS OF AUSTIN MARQUETTE OF AUSTIN  
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ST. PHAEDRUS OF AUSTIN MARQUETTE OF AUSTIN  
ST. PHAEDRUS OF AUSTIN MARQUETTE OF AUSTIN

Friday  
Sunday  
Jan 30 1887

303<sup>d</sup> To C. B. R. Jan 31<sup>st</sup> 1887

C. B. R. and I visited Olson and he agreed  
to the C.M. R. raising \$100,000 on its own stock  
to use as working capital. As he got from  
the C. B. R. light & land they to have the option  
to take the stock after a year - C. B. R. and  
I to work out the details

Feb 2 1887

304<sup>th</sup> To C. B. R.

M. W. and I went to Menominee to see  
what condition we were in for manufacturing  
expense

314<sup>th</sup> To C. B. R. Light Co. Feb 3 1887

Meeting of the Light Co. decided to  
increase the capital sufficient to take in  
the N. B. Light Co.

Got the assurance of Mr. Carter that whatever  
was done in the Light Co. should be  
nothing done that should impair the  
interest of S. G. Co.

305<sup>th</sup> Light Co.

At a meeting of directors on Monday  
of 31<sup>st</sup> it was decided to pay dividends

at the rate of 1% per month commencing  
1<sup>st</sup> March 1894.

306<sup>1</sup> Taylor and Co.

Feb 5 1894

at a meeting of board of directors it was  
decided to mortgage the capital stock  
from \$25,000 to \$50,000

307<sup>1</sup> Siemens Cable

Henry Johnson & I met Willard in regard  
to Siemens Cable at his office. Saw  
his samples. I found them the same as before  
made. He decided afterwards that  
we were not obliged to use his process and  
probably could get along equally as cheaply  
but it was good policy to treat with him.  
I think we could buy machinery from  
Siemens & a man to erect it & begin  
immediately.

308<sup>1</sup> L. A. C.

Feb. 8<sup>th</sup> 1894

Saw him at his house and found him  
much improved & made it away  
towards night to Florida.

Spoke to him a proposition from the  
light to about raising \$100,000 for C. M. W.  
which was light C. & sell \$25,000 worth  
of it stock & a party for \$25 per share  
on condition that he have the stock  
\$25,000 at 6%. Then light C. &  
loan C. M. W. \$100,000 for 12 months  
at 6% & put up \$25,000 Machine  
tools stock on option for light C.

\* take it at par any time in the time of loan - no dividends to be declared during loan.

But when we could use the 200 (about)  
share of light oo stock we now have  
for same purpose if he would sooner  
instead of paying it a dividend  
He preferred to sell his share of  
Oidum lly. stock to loan the money  
to the C.M.W. which he authorized us  
finally to do

309s Odism Black Light C of Europe (lin)

Meeting today - Edison resigned presid<sup>y</sup>.

Yas a director - Batchelor appointed pres.

Late a director — Action of the

313

Feb 12 1894

Side painting

the machine for coating  
 the on Edman's plan has been made to  
 work to a chain

to turn per minute  
 (9) (9) (9) (9) (9) (9)

It is at  
 present today.

314 Laylor Co. Co.Feb 14<sup>th</sup> 1894

Meeting of Laylor Co. Co. buying 9

3 lbs. After which Laylor &amp; I went to

Smith &amp; Woodward &amp; closed the arrangement

315 Accumulators

Feb 15 1894

Meeting at City office with Madden &amp;

Quinn on accumulators as applied to  
 lighting - same etc.316 Runs of Penna here

Feb 16 1894

317

Feb 17 1894

Dined with C. H. J. at his house with Frager

&amp; Luff Fujisaka and Yama. Sunday, I

was happy

318

Feb 21<sup>st</sup> 1894Testified before in interpretation Nares paper

case at Duncan Clark's place. It took

Nares described machine we made

in 1892 at Wash. St. &amp; what we use

at present

319. Went to Schemetady & Feb. 22 1887  
returned at mid night —

320 Interference Case 27. Feb. 23 1894.  
Testified in Waxed Paper case at  
Duncan Court Page 32 Park Place  
20m & 4 p.m.

321) Callender Co shops Feb 26<sup>th</sup> 1887  
Visited their place at Newark N.J. with  
W. H. Callender & P. Susall.

321 Siemens' Cable.  
My talk this morn with Mr Willard has been  
to say Siemens a royalty of  $2\frac{1}{2}$  or  $2\%$  on the  
price the E. & W. sell them at.

522 ✓ Mch. 1<sup>st</sup> 1884  
Started for Fort Myers Florida at 9  
p.m.

Mch. 3<sup>d</sup> 1884.  
Arrived Jacksonville at noon -  
Left again Mch. 4 for St. Augustine  
Rm'd down St. Lawrence. 5<sup>th</sup> 1884  
Went to Silver Springs  
Silver Springs & Santa Gorda 7<sup>th</sup> 1884  
Santa Gorda & Meyers. 8<sup>th</sup> 1884  
Left Meyers from Dec 1<sup>st</sup> to the 21<sup>st</sup> 1884.

323. Magnets Wuton. before 19<sup>th</sup> Dec 1847  
Since the 8<sup>th</sup> of present month I have  
worked making experiments on a new  
principle of Wuton for Obedson. The  
principle on which he works is

as follows: - 'The production of a distortion of the line of force in the form of an armature by heat', and the rotation due to the distortion.



When the armature was made with a number of discs mounted to turn on a shaft and the sections heated at A+B so that the magnetism was instead here the line would be displaced & consequently it would endeavor to turn. In the disc form with holes to facilitate heating and cooling the expansion & contraction was great & caused a ruckles which made the wheel untrue & consequently gave bad results. He made many kinds of armatures: -



ring & spiral edgewise. -



ring & spiral, round wire -



Flat discs perforated



Flat discs and slotted radially & take care of expansion better as well as heating and cooling quick. The best under as far as got with



o bul. all studded with pins,  
like a circular brush - the  
form allows of quick heating  
and cooling and does not allow expan-  
sion & contraction to affect its shape

324

En route 21<sup>st</sup> 1887  
Left reports for Punta Gorda, Kissimmee  
& Jacksonville and from there to  
New Orleans on 24<sup>th</sup>  
New Orleans wire 29<sup>th</sup> Mch  
& saw Central Station, Custom House  
& other isolated Mch's.  
Spent 31<sup>st</sup> Mch in Mammoth Cave  
of Kentucky & arrived in Cincinnati  
at night.

Left Cincinnati for Washington - 31<sup>st</sup> Mch.  
Washington 1<sup>st</sup> 2<sup>nd</sup> 3<sup>rd</sup> & 4<sup>th</sup> April

325

Received \$245<sup>00</sup> scrip. of Edison Electric  
Co. of New York

326

Received 393 ordinary and 393 deferred  
share of the Australasian Electric  
Light Power & Storage Co.

327

Not enough done  
The New Orleans Times Democrat. 7  
Mch 29<sup>th</sup> 1887

328<sup>3</sup>Schenectady, Oct. 8<sup>th</sup> 1877Improvements on Dynamo.

Was at the Works all day and I notice the following improvements in the looks of the dynamo.

- 1 Magnet covered with Manila rope
- 2 Magnet Wires of fibre and turned up & made
- 3 Conductor bars braided with stuff better material of tape
- 4 Keypers all planed
- 5 Better planing etc

329<sup>3</sup>St. C. M. R.

Went, J., and Small decided

- 1<sup>st</sup> 2. Discharge McDougall on Monday
- 2<sup>nd</sup> 2. Get the contractors prices very considerable as soon as we have a complete list of what each is making for last month

330<sup>3</sup>J. G. Edison

There is a telegram from Gallatin at New York saying that Edison has another abscissa below the car in addition to the one that was operated on three days after I left here and that they fear dyspepsia.

331<sup>3</sup>to Austin C. Mfg. Co.

While I have been South W. Plimoth has been appointed Vice Pres. of the



Company (of course with my approval)

332.

Taylor Co. Co. April 9 1897.

Meeting board trustees - issued stock  
in \$5000 company - raised Taylor's  
salary, new building completed -  
Balance for April 1<sup>st</sup> shows \$3500 -  
\$4000 stock issued -

333.

April 12.  
Soranton with Heminger - visited  
Solanton Steel Works - Pandey's  
Electric Drums at Station -  
O'Brien Electric Light Station and  
left at night

334.

April 13  
Carbondale  
visited Meeting house Station &  
Linn - made trip on Gravelly  
road to Homedale & back  
14<sup>th</sup> Carbondale to Albany

335.

April 15  
Schenectady  
All day - Made trial of Millsaps  
new wire & brought samples home  
- Appointed dinner at head of  
Trip #2 - Secord & Oak  
Hillard for wire information on  
Cincinnati cable - brought land adme.  
New York April 16

336.

Illinois Laboratory  
sent draughtsman to Landonum  
to get a plan of Illinois new

ground at Orange & started to design it.

### 537. Ship in Canada

Capt. Upson, Bergman & myself were talking of a ship in Canada - Smith's want to be in the influence - we thought that we should have a 50% benefit over above capital for our experience etc. -

Comp. Cl. & Ship in Canada 15,000

Rover 4,000

Bergman & Capt. Upson

15000. Paid or to be (special) 22,500

4900. Income 22,500

Ship 64,000

Now Smith's cost 52,500

Total Capital \$120,000

This of course is only preliminary talk

### 538.

#### Dynamo

Have been making bronze bearings in the small machine for some time - they are perfect - We decide to try one in a larger scale & we shall make 12 bearings.

Like sketch - Capt. on end of bearings & prevent the bush coming out.



339<sup>a</sup>New York - Apr. 19<sup>th</sup> 1894.Universal Supply Co.

Fisher, Taylor, Korman, & Co. met at  
Lafayette Co. agreed on a \$1500. Co. and arranged  
to sell about 5000 to start the business  
& pay for stock

340<sup>a</sup>New York, Apr. 20<sup>th</sup> 1894The Edison Electric Light Co. of America (Limited)

Signed all the 200 bonds on West

341<sup>a</sup> New LaboratoryApr. 22<sup>nd</sup> 1894

Went to Jewell's park to see the plot of  
ground that E.A.E. is going to build a  
laboratory on

342<sup>a</sup>Books.

Bought a set of the Society of Arts Vol.  
16 & 18 & paid \$5-

343<sup>a</sup>Heater Amalgam

We have found out by actual experiment  
that an amalgam made up on the Edison  
type with discs of .006 thickness instead  
of .0015" made less (without wire on) by  
100% - Experiment and keep continued  
further.

344<sup>a</sup>New York April 25<sup>th</sup> 1894.Universal Supply Co.

Subscribed and paid for twenty shares  
of the Capital stock of this company  
Have \$100 each Capital \$2,000-



345. Olson United Refs. Apr 29 1887

Meeting today - decided to buy all material  
such as boilers, engines, wire etc ourselves -  
Inspector to be hired - Ordered another call of  
10% -

346. Olson Apr 30 1887

Returned from South much improved but  
still with abscess. not quite healed.  
May 2<sup>nd</sup> -

350. New Laboratory

Saw Olson at Orange & discussed  
the new plans - instructed me to  
ahead & get an architect immediately  
on it -

May 3 1887

Put the Laboratory into the hands of  
J. H. Holley 112 Broadway & design

351. B. E. Light & of Chicago Lumber May 4<sup>th</sup> 1887

Stockholders meeting - approving all  
the actions of the directors for last  
year

352. Upton Martin

B. E. & I met U. M. at his house and  
decided to make some little improve-  
ment and use later for feed in New  
York

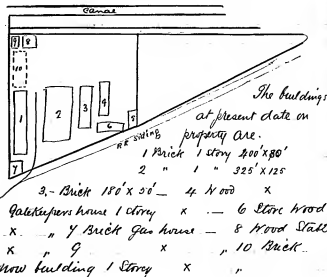
353. Olson United Co May 6 1887

Meeting today - decided that the Company  
could do its own construction. no buying

or contract for same if the officers so desired

354

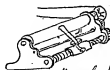
Schenectady May 7<sup>th</sup> 1897.  
Spent the day at shop on discussing tele-  
graphs with Wrenn etc etc  
Foundation is built for the new tele shop.  
They are laying a sewer under the Canal  
They have bought the corner property



355

May 8<sup>th</sup> 1897.  
Saw Belle Graphophone today at  
Barber 2 St James Hotel. Mr. Cleghorn  
inhabited it & had a typewriter there  
& show it up. I was arranged to  
run with foot power with a governor  
attachment between the reader and the

instrument is that a practically uniform speed can be kept - Cylinder of paper with  
 & of wax on it - Cylinder has a step motion  
 so as to step without stopping thread -



The talking diaphragm has  
 a cutter point on it and  
 rests on a  $\frac{1}{2}$  round  
 piece of brass that  
 fits the head of the machine. The  
 receiver is similar as regards the head  
 but it has a small point that is fixed  
 to its diaphragm by a silk thread so



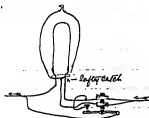
### 306 New Laboratory

May 9th 1918

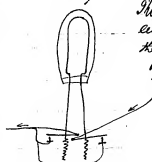
Looked over plans to Odum & see and he  
 will turn them over to have a rough  
 estimate made on them  
 Decided to have office and shop floor  
 16' high instead of 12' and two rows  
 of columns

### 307 Municipal Lamp

John, Jennings and I talked with  
 Odum on the Municipal Lamp.  
 What will prevent the 'one' from  
 running down the wire. Odum  
 suggested a number of ways of  
 mounting it. Amongst which were  
 the following:-



Differential Out-out - Two wires run up one end of the insulated except at the top where they are connected by safety fuse. When fuse goes or either wire is burned the magnet will close circuit round the lamp.



This is purely mechanical, if either side wire are off the lever will close the circuit by the spring pulling it down.

### 368. Monograph.

Making cylinders of plumbago, hunkite, and graphite - No record on this is made by a point and the dust falls away leaving no shaving etc -

### 350. United Co.

Meeting today at which it was agreed that the Co. should buy all its own material and put itself in such a position that it can erect plants if it likes -



360.

May 14<sup>th</sup> 1894.Edison Laboratory at day.Underground Conductors

I designed a new joint for Edison for connecting together the copper rods in three wire tiding. Make a spiral of copper the



section of which is as 1 to 2 in regard to its own section and half of the conductor. Stamp a thread in the end of the rod before it is put in the tube. Then the tubes are and these spirals are on one end and are screwed back on to the connecting end and soldered. Both the rod and the spiral will be soldered or rather tinned before hand.

361.

Reichmann Stock.

I received this day sixteen shares of B and C Stock from Edison as per agreement. Certificate 319.

362.

Carlton

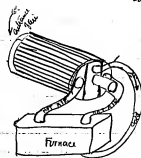
Edison made some exceedingly finely divided Carlton by mixing strong sugar acid with a saturated solution of sugar and water.

563)

Photograph. Eastman May 16<sup>th</sup> 1874.  
 That will be able to get our cylinder  
 as well as stop and start at will etc  
 Edison proposes a machine that will  
 cut a groove ahead of the tattooing  
 needle and the indentation is  
 made at bottom of that, this is  
 reproduced by a point on a hair  
 spring which just lays in & then  
 a guide & guide it by the inside  
 portion

564) Edison's Hot engine

He gave me the ideas he has had in re-  
 gard to the making of his Hot engine  
 the experiments for which I made for  
 him at Fort Myer. He makes up



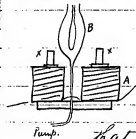
An armature of thin tube of  
 iron placed lengthwise as  
 in sketch at each end  
 he has a plate so arran-  
 ged to cover the tube  
 so that either cold air  
 or hot blast can be  
 kept through - blast  
 spray cold air coming  
 through middle and  
 passing under furnace goes through  
 the two sides and out then utilizing  
 all heat.

He proposes to make the magnet heads  
with slots in as:— These  
slots are filled with wire  
wound round the  
outside of the armature  
but not on it and left so that the  
armature can freely turn—  
Current in wire round will make  
a N & S on armature, this being  
so the N of arm. & S of field will not  
only attract but the N of field will  
endeavor to repel the N of arm.  
I am making one of 25" diameter  
and 36" long.

No. 3. Phonograph. Late May 17<sup>th</sup> 1894  
After trying a large number of  
compounds of Paraffin, Resin,  
Asphalt, etc etc I found  
that the best mixture so far  
for an indentation or even for  
cutting or scraping is 1/4 part of  
Resin and 3/4 of Paraffin.  
I find that a wax like paraffin  
with turpentine over it is also very  
good as it leaves a cushion behind.

No. 4. Lamp Manufacture. May 18<sup>th</sup> 1894  
Laboratory all day.  
I see that Edison is using a vacuum for

straightening the carbon in lamps  
which he has evidently been using for  
some time. He finds that a magnet  
attracts the current  
passing in the carbon  
and he utilizes this  
for his purpose.



B. Lamp on pump.  
A. Strong Electro magnet  
x x for core poles

That can be removed at will  
7. Shifted to draw the carbon in any  
direction

364. Laboratory (New) May 19<sup>th</sup> 1894  
Olum, J., Greenland and I saw  
discussed plans at Holey's office  
and decided that they were right  
and that they could complete  
them. Olum went to Schenckel's

May 20 1894

United Co.

Chemist and I met G. C. Lumm  
this morning at 6:55 A.M. and  
got from him a price of 3 1/2% off  
list which was guaranteed to be  
better than any price they had  
ever given to anyone else.

Olum at Schenckel's today and  
G. C. Lumm

Nov. Lubing Joint

East Newark

Lab. E.N. May 21<sup>st</sup> 1894

Making a new joint for rods. in tubes.  
 the two ends set up & form a cup and  
 ball and secured together  
 by screw and nut  
 sleeve A+B. then soldered well.  
 Holes are drilled in A+B all round  
 to allow the solder to run freely  
 & make a good joint.

170Monograph

East Newark

Lab. E.N. May 23 1894

I am making a phonograph for Edison  
 in which the receiving needle never  
 touches the surface of the record but is  
 itself electrified and is attracted to the  
 surface more or less as the record is  
 indented more or less.

East Newark

Lab. E.N. May 24 &amp; 25 1894

Worked all both days out there.  
 We made a receiver on Monograph  
 with a horn composed of four cane  
 reeds which taps on the surface &  
 makes a minimum of scratching  
 noise. It also is in adjustment  
 at all times. But of necessity  
 in the back the talking is best.  
 Used a point of 4, 5, and 6  
 grains laid side by side. so:-

but the bristles were not as good  
as Camel hair - and they gave  
more scratching noise owing  
to their being stiff.  
Giltland sick & home sick days  
May 26<sup>th</sup> 1887

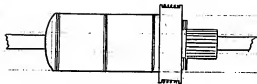
C. F. Giltland sick.

I made phonograph recorder point  
of sealston hair. made into a brush  
about .004" diam. this brush  
gives absolutely no scratching noise.  
the talking is low but very good.

I made diaphragms with points on as is  
with sealston hair brushes of all  
sizes from .040" thick (which is the  
width of thread on machine down to

.008" - I also did the same with light springs  
such as we generally use. I made comb  
for diaphragm and for spring on dia-  
phragm of the following:

Silk, flax, cotton, Wool (with),  
Silk thread, silk cord, a single bristle,  
a single whisker hair, Cambric, thin  
kashmir, soft rubber, and fine paper  
edges off, all of which gave talking  
but when talking was at its best there  
was always more or less scratching -  
the first three being better in the  
perfect than the others but inferior  
to sealston hair. I think -



Having found a point that gives us  
satisfying I shall now endeavor to  
get a thinner foil and better transmitting  
diaphragm and points and must make  
delicate receiving diaphragms.

May 24 1891.

C. S. Gilliland still sick

Phonographs:

Made a receiver point of a single  
hair, bristle, & also of two and  
more scales hair fastened to  
a sensitive diaphragm a, this  
was cut long and guided by  
a screw mounted on a bridge b.

341. Edison C. Light Co. of Edison Co.

Received Bonds 188, 189, 190 in  
exchange for my bond voucher.

342. Edison Co. Co. Armature #4

This armature was made some time  
ago now. Coils resistance was  
inserted between the tip and the tongue  
in such a manner that the resistance  
across the brushes was double that  
of an ordinary armature. The wire was  
formed double. The present object and was  
wound around a spool placed over  
the end near commutator. The brush  
covers three bars at the time. The coils  
were used in one length of G. I. wire #16

23 feet long (0.68 ohm coil) resist. Vbbs cold.  
 Rubber tape humulate. Three in multi arc -  
 0.22 ohm each side - Am. res. 246  
 Amature was run as a dyn. at 40 amp.  
 (1/2 load) brushes set at non spark point  
 load was varied every 15 minutes, 0, 20,  
 40, 60, 80, 60, 40, etc etc. There was  
 as much spark at 0 or 80 amp. but at  
 80 amp it cut more - Temperature 15°C  
 after 1/2 hour and extra 17°C. At 20%  
 Note Speed of extra coils greater than  
 others would radiate faster.  
 As a motor it ran as well. General effect  
 of the coils res. is to make as much start  
 with a variation of 40 amp. at 1/2 load as  
 a regular #4 would make under a varia-  
 tion of 15 amp. so res. practically  
 increase neutral point three times.  
 At 80 amp there is always a slight spark  
 which cannot be got rid, it however does  
 not cut much.

1925

Feb 27<sup>th</sup> 1925

B. J. Gilliland still sick -  
 Transformer in Hamant from  
 two machines 1200 v x 48 C each  
 + take out 500 a. at 115 volts -  
 Transformer amature body size a  
 regular #4 104 divisions 12" 11" 145  
 once around and 26 comm. blocks  
 Fobos in main dis. to and on 2 dis.

303  
 428



042". Secondary winding 3 "<sup>14</sup>" 3 or 9-  
times around and 48 or 26 blocks  
Kasi. segm. - "19 thru - perm 0020"  
H. O. Secondary 830 } 1335 or  
" " Primary 625 }

50% more than an ordinary "16.  
I figure on this that with the thin discs  
at 2000 we shall have as much heat in  
the iron as on an ordinary "16. To have  
50% more heat units but at this speed  
it ought to radiate faster & get rid of  
it.

#### 373.4 Electro-Thermic Battery.

Following up experiments shown at 323  
and 364 we have just finished  
drawings for a generator on the  
principle

5/4

Lab. E. 2. June 1<sup>st</sup> 1897Phonograph

Walt chose post-talking diaphragm  
 and tried this as wide as 1/40"  
 and as narrow as 1/10"

Received from these records  
 with bristles, Camels hair, etc. etc. with  
ridge and guide for the pointer.



We found that by talking low  
 in a mouth piece connected by  
 a tube you could do away  
 with all dampening of the  
 diaphragm and get excellent  
 talking.

On the receiving diaphragm  
 (which we now made of gold beater's  
skin stretched) we can use a pretty  
 stiff bristle without getting any  
 scratching noise.

Also found that a needle (which  
 is cork or batten and fastened to  
 the center of diaphragm) put  
 talking on the foot that was said  
 very low & thick could be very  
 easily understood even though  
 you had not heard it set on.

We use two earpieces on receiver  
 all the time

O. J. Gilliland still sick in  
 bed.

3/5 MagnetismLab. C. H. June 1<sup>st</sup> 1889.

Made some days ago a magnet of #4 telegraph wire (bare) 160 feet long in which was inserted a 22 copper wire for 40 feet. On passing a current through it the iron was magnetized for about 17' from the end of the bonding at both ends and then again at each end of the iron wire but practically nothing in between.

When the wire was cut short so that it was a 40 feet magnet, and a strong current passed around it it retained its magnetism for 10 or 12 hours after the current was off.

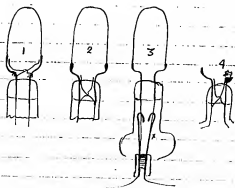
The discharge of a magnet generates a current in a coil around the iron in the same direction as the magnetizing current and this tends to magnetize the iron and only lets it come down very slowly. When the magnet is very long this seems to be very

concluded.

3/6 Stenograph

We have had excellent talking all day have used for talking Stenograph. Stenograph with needle in middle two opening - the same with bridge to guide it -





Diaphragm held by three  
springs & needle with  
bridge

In some experiments we have  
let the bridge ride on the lamp or  
cylinders in which case the needle  
only just projects - Not too talking  
this is very good

SVY.

Lab. <sup>10</sup> June 2 1894.

### Municipal Lamps.

Jinks, Klinger, & I tried a lot of  
lamps of different styles as shown  
opposite - We found that whenever  
two wires soldered (apparently) together  
of copper, the one that globulated  
generally touched the other one  
slightly and when cool they could  
be separated as a show the  
oxidized surface of the other wire -  
This means bad contact and only  
an accidental closing of circuit -  
When extra wires of platinum  
were used a perfect globulated  
soldered connection as shown  
in Fig. 4.

Fig 1 has two copper wire fastened one  
to each pole and each led over & ob-  
opposite, as do the in class previously  
test

Fig 2 has platinum wire led over but

the platinum goes right through the seal and may project a very little into the lamp.

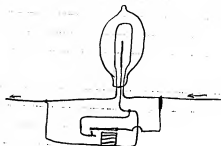
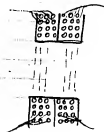
Fig. 3. Shows a lamp of Odium's, it is entirely mechanical; the two springs at x are held apart by the wire going through the glass, as soon as they are loosened the springs close and short circuit the lamp.

Fig. 4. is a Fig. 2 fixed.

Lamps tested - Fig. 1 all bad contact even if they worked. Fig. 2 very good a large percentage caught. Fig. 3 all caught but one or two that are found were defective. They however made a great deal of flame inside before they loosened the wires in the glass so that the springs could be set free which would be objectionable only if used in the house.

#### 3/4" Dynamometer. Heat.

On a  $20 \text{ dyn.}$  we have 18 bands, four of which, (2 on each end) are connected together by copper strips. These 4 develop 160 r.a. when armature is 125 r. and the other 9 develop about 140 r.a. The copper strips are so short that even if they were German silver they would still develop about 110. If there were no strips the end bands would be



same as others, making total of 1175 instead of 300.

If the armature was wound with Ger. Sil. instead of brass wire soldered say 3" for 1/2" or every 4" for 1" heat would be less than half.

The heat due to current alone on the wire is 1240 on a vertical 20 and 1150 on the old style so that at present the band heat is 25% of the total heat. (May 11, 1894 at Schmelzbad)

#### 5495 Dynamo - low speed

110 Poles 200 Amp. 500 rev.

A "16" in all mechanical respects.

Arm. 14 in. 6" 1/2" twice around

and 14 in blocks - 1 vertical - 88 div.

Height of wire 9 1/2 in. Res. .022 ohm

Magnet. 160 lb. of 71 (35 x 3 1/2") each

16 mm - Ext. 100 full load 1.6 ohm

Brushes a little thicker and <sup>new</sup>

#### 5504 Municipal Lamp Lat. P.A. June 2 1894

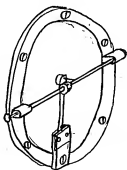
Shaw designed a new municipal lamp which cuts out and closes the circuit as shown in sketch. Lamps must always be put in one way, but that is in detriment as the wiring can be arranged for that - none making for test

#### 5515 Thermograph Lat. P.A. June 3 1894

Used diaphragm of felt of various thickness backed up with cotton



Sound Curve, to  
Case 5<sup>th</sup> & 7<sup>th</sup>

35<sup>th</sup>

June 6 1887

On jury duty from 10 a.m. until 12 noon  
B. F. Gilliland also sick in bed.

36<sup>th</sup>

Photograph

As the low sound makes an indent small in depth, and the loud sound sounds one deep; and as the loud sounds make the diaphragm go in deeper than necessary, we put a stop on the needle spring, so as to prevent this. We then found that you could talk to the diaphragm as loud or as low as you like and there was very little difference in the receiving diaphragm.

We will also try a double stop, that is one for each side of the spring. as shown at x.

37<sup>th</sup>

June 7 1887

On jury duty from 1 p.m. to 5 p.m.

38<sup>th</sup>

June 8 1887

On jury from 10 a.m. until 11 a.m.

39<sup>th</sup>

B. F. Gilliland a better letter.

40<sup>th</sup>

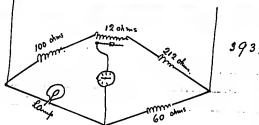
Met M. Conway at Hoffman House at night

41<sup>st</sup>

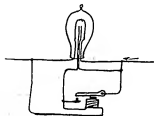
Cherry Uptown Station

Went to meeting of Uptown District Committee at B. F. J. Arms late

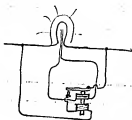
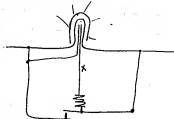




393.



394



396

393<sup>s</sup> Howell told me a made for  
Cui. O. & other stations.

394<sup>s</sup> Municipal Lamp June 9. 1887.  
This is an improvement on Edison lamp  
at 380. When the vacuum is partially  
destroyed & metals in vapor the two  
extra wires in lamp will have a  
current between them and close the  
magnet which then receive current  
thru through its contact points &  
Keeps the lamp closed.

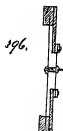
Municipal lamp

Two wires in lamp close together - one  
connected to a fine platinum wire  
holding up a lens from making contact.  
When lens rec. across the extra wires in lamp  
the wire & fine & the spring act & form  
a close circuit - This is an improvement  
on one that Edison told me about today  
that had only one wire inside -

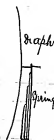
395<sup>s</sup>

Municipal Lamp

In 394 it is quite possible the arc instead  
of starting right through the two wires  
would be repelled by one pole, as Edison  
suggested that we put them as shown  
in sketch. Current passing across the  
wire would close the top magnet  
when the armature point would  
close the circuit permanently -



196.



The rounded diaphragm  
is exaggerated to show  
clearly what is meant.

### 386<sup>s</sup> Photograph.

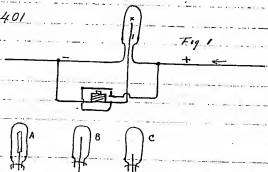
Lab. C. <sup>East</sup> ~~West~~ June 11 1894  
Made this mica diaphragm with a  
short thin spring  $\frac{1}{2}$ " in front of it, the  
spring fastened at both ends and point  
mounted on to diaphragm with cork  
or leather between. This point has a  
shank on which extends through dia-  
phragm with nut on other side. The  
nut however frequently buckles the  
diaphragm if screwed up tightly.  
-G. F. Gilliland still sick-

### 387<sup>s</sup>

#### Photograph.

In order to have perfectly free movement  
of the talking diaphragm A. C. suggested  
that the diaphragm of the ear was pulled  
out by a special apparatus and that  
this was so more or less according to the  
voice. He said make a stiff spring & fix  
it to the centre of diaphragm & leave the  
dis. loose. We got very good talking  
with this and we got the quality of  
the voice which is almost impossible  
to get with flat diaphragm. Also  
low talking is about as loud as loud  
talking because for a very slight  
movement such as the hissing sounds  
make the spring is very flexible  
while for loud sounds the spring  
movement which needs 900 lbs. heavier

401



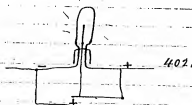
320 Upturn Station June 13 1884  
Meeting at C.H.'s house of C.H., Hall,  
Sunt, Kuni; C.B., & J.A.C. discussed  
station matters and the various specifica-  
tions

320 Upturn Station June 15<sup>th</sup> 1884.  
The G.M.W. received an order for  
\$150.00 for upturn station today -

301 B. S. Githland about well again  
and going West to recuperate -

401 Municipal Camps. June 16<sup>th</sup> 1884.  
We tried today 15 lamps each of the  
three A.B.C. in device as shown at  
Fig 1. - A had a thin piece of steel  
sifter running up two kinds of heagle of  
carbon - B had a plat wire running  
same height - C had a plat wire about  
half height of plat in B - They all  
worked perfectly, cutting out promptly  
without any unnecessary flaming or  
rusting.

We then tried 3 long plat. B<sup>o</sup> with the  
current reversed so that + was connec-  
ted to + pole - All three cut out perfectly,  
but the platinum wire immediately  
fused down to 1 and stayed there until  
the carbon broke.  
Sunt, C<sup>o</sup> and then A<sup>o</sup> did the same  
but cut out perfectly.  
Then B had current in direction a



402.

shown in Fig 1. The wire got blue about  $\frac{1}{2}$  way up and just red on top — When A had current in direction as shown in Fig 1 the side toward the positive side of carbon got black on top and for about  $\frac{1}{3}$  down so if carbon was being deposited. Then lamp I watched through a smoked glass — All the lamps were tested with about four times the normal current or about 16 amperes to make them go quick.

403. Mumma's Lamp June 17/1894  
Tried 15 lamps of the new Edison type today and all cut out perfectly when the carbon broke. The middle wire had an iron wire attached but that held up a spring from off a contact point. When carbon broke the current passed down the center wire heating it to fusion & letting down the spring & broke the circuit. All we tried worked perfectly and we put current through both ways.

404. G. Underberg Co.  
Made another bill of \$2000 at 15 days — Saw Hume & Francis and discussed Agency matter with them. Got them to understand that this Co. would be business by extra agents in the East Agents. Writing (advice) Young the Genl Agent of Commissioner of it. Could as it was a necessity (absolute) to do all the business that could be got in

# Electricity as a Safeguard Against Collisions on the High Seas.

In an able editorial on the recent collision between the *Britannia* and *Ottie*, the *Times Herald* says:

Assuming that two steamships are, under such conditions, approaching each other, each going at a speed of fully twenty miles per hour, that covering the space that separates them at the rate of a mile in a minute and a half, and it becomes evident that the possibilities of a collision are not adequately provided against by any of the appliances that marine science has supplied to our sailors. Under the conditions we have referred to, it becomes very largely a question of luck. If the hulls of all vessels are constructed of steel or iron, so that collisions will be before long, it might be possible, by the use of electro-magnetic devices, to receive a warning of the coming of another ship within a range of three or four miles of the vessel upon which the aforesaid apparatus should be placed. Indeed, it is not impossible that electric signals will be so far developed as to render practicable telegraphic communication between two vessels thus placed, and in this way each could communicate with the other, and take the measures necessary to avoid the danger of collision. This would be a great step in advance, and considering that a position scarcely less liable to fear from the ordinary perils of the sea, it would remove what is now about the only danger that threatens those who wish to make ocean voyages.

Elect. Rev. June 4 1887

order to make up the enormous loss it is now making—

404 C. P. Gilliland quite well and fine met. for a short time

403 C. B. Light & Co. of Europe June 20 1887  
Meeting directors - Batchelor, Lunnell, Lato, Lounman (Cottin, resigned)  
Authorized power to Hayes & Lunnell or sell the founder shares left with C. B. Light & Co.  
Authorized contact with Lamp Co. for royalties on lamps sent to Europe.

Elect. Rev. a director and cutting res.

406 Western Union Tel. Co.  
They are now putting up the 16 machines we sold them for 185 Broadway.

407 Left for Pittsburgh at 11 p.m.  
June 21<sup>st</sup> & 22<sup>nd</sup> in Pittsburgh looking of matters in regard to sheet iron of 1800 thickness. Went to Denbar & the U.S. Iron and tin plate Co. work - Went to U.S. Steel - to American the heat of the plate & will get as what we want I think -

Left at 4:30 p.m. for New York.

408 New Company June 24<sup>th</sup> 1887  
Filed a number of things today to get a suitable cheap material to make the photograph sleeves of.  
10 Room 10. Harlem 1 Ami Wood tax (1)  
" " 2 " " (2)  
" " 3 " " (3)

10 Kain 10 Karlin 4 Pine wood (4)  
 " " 5 " " (5)  
 " " 6 " " (6)  
 " " 8 " " (7)

1, 2, & 3. found easy but were brittle  
 4, 5. found easy & even better. 6 & 7  
 found not so good but good enough & were  
 very hard -

10 Kain 10 Karlin (8). very brittle &  
 unsatisfactory but I found that the heat  
 was not right for this and I succeeded  
 in breaking (9) 10 Kain 15 Karlin  
 which moulded fairly well and was  
 very hard (10) 10 Kain 5 Karlin flew  
 too freely & brittle - (11) 10 Kain & 6 Karlin  
 data - (12) 10 Kain & 4 Karlin data -

"9 is excellent so far - the heat moulded it -  
 it does not stick to tinfoil nor paper -  
 All from 1-12 are able to withstand 6  
 tinfoil and 9, 10, 11, & 12, does stick to paper  
 but 1-8 do -

Not an iron mould slightly planed good  
 "9 easily runs itself

407 Moulded back for June 25 1874  
 Met Mr Wood (Assessor) at Monte &  
 put the property in his hands to fix up  
 and sell or rent.

410 New Compound. June 27. 1874  
 (10 Kain 15 Karlin - "9) In experimenting  
 to mould this we tried - Coating mould

with plumbago, - with this coarse plaster of Paris  
with powdered pumice stone - this solution of  
Karoim, - black, - also of which came out  
more or less poorly. - He now moulded one  
in a highly polished mould and it came out  
beautifully and polished

4114 Cont. IV.

June 28<sup>th</sup> 1894

Went up to Schenectady, took over the feeder  
contract with Kuno & Enns, previous to signing  
contract

Rate for January -

\$74.500. 16

Feb. -

69.401. 47

Mar. -

145.508. 68

Apr. -

74.941. 44

May -

120.899. 49

June (1894)

84.165. 45

Total

\$342.507. 59

4115 G. E. Light & Dark

Bought 60 Karim at \$225 - \$13500

4116 New Compound

June 30<sup>th</sup> 1894

(3) 8 Karim 4<sup>th</sup> Karim - Run free - Black  
no bend - breaks sharp, cuts like hard  
rubber

(4) 6 Karim 6 Karim 1 Runwon -

Run free but too heavy

(5) 6 Karim 6 Karim - 2 Runwon too soft

(6) 5 Karim 1 Parafin 4<sup>th</sup> Karim heated  
run easy, cut well - but a little  
soft - this day very warm

414 Cash

June 30 1891.

Cash - 11. Hard Bank.	744.00
Street M. & C.	144.45
Manama Bank for Savings.	344.35
Newark Savings Bank.	50.00
See from C. M. W.	589.22
" " J. L. Lull.	185.00
" " H. M. Luvon	416.46
" " J. A. Edson	658.20
Cash in hand	1090.00
Bonds - 2 4% Gov. Reg. 125.	2506.00
3 B. C. L. C. Fin. 1790	570.00
Notes coming due next 4 m.	16791.00
Stocks - 3 1/2% C. C. Light C. 1250.	87460.00
376 - B. C. L. C. of Charge Lin. & Y.	2632.00
37 1/2 B. C. L. C. of New York.	3750.00
1063. Bagail B. Shom. 1/2	1063.00
Ind. & C. B. Light C. at 220	500.00
204 B. R. W. C. of U. S. 510	2040.00
25 K. H. L. & C. at 11	251.10
50 International ditto 110	500.00
222. Magna B. R. W. Motor C. 700	22200.00
5 Edison Lamp C. 400.00	20000.00
1853 Edison Machine Work 1100	130000.00
2493 Bagman T. C. 1100	24933.33
102 1/2 Taylor T. C. 1100	10220.00
100 Ore Milling Co. 1/2	100.00
Moscone Mining Co.	0
5 Panama Canal Co.	252.70
	13743.637.71



Carried forward		\$43.63	41
100 Shau. Silverizer Co.		100	00
50 " Aluminum Co.		"	"
1370 " Meane Bros Co.		"	"
5 " Photographic Co.		0	00
593 Ordinary } Australia S.L. Pt.		393	10
593 Deferred } Storage Co.		393	00
Phragas Motor in France		1478	26
Pumtine 7250 lbs 2 1/2% + cart.		8402	00
Boots		646	00
Pictures		494	00
Property: - House at Meule Park.		500	00
Lot " " "		100	00
144 Main St Newark N.J.		3388	02
75 R 100 Newark N.J. N 2 + 60		900	00
4 66 1st Estate. Mich.		250	00
Salvage - Arm Co in France		146	00
" " " Canada		65	00
Armature in " "		63	00
" " " France		146	00
Due from C. E. Light Co 10% of }		6000	00
What is due them		\$ 364	436 79
Dec 31 1886		\$ 336	639 00
June 30 1887		\$ 364	436 79
Increase		\$ 28	797 00

413. Canada Trip. Aug 1<sup>st</sup> 1894.  
 Rosa, I & Rosa & Emma left here  
 July 3<sup>rd</sup> for New Brunswick - Fall River  
 New & Boston - Rail to Portland -  
 Boat to St. John N.B. Rail to Camp-  
 Belton - Stayed 10 days at Mr.  
 Stephen's farm at Flat Lands N.B.  
 Fished for Salmon on the pools of  
 the Campbellton Club. - During his  
 time made a journey up the Metabetchuan  
 river by Rail & down by Canoe -  
 Stayed at Canapishual and fished  
 the pools of Sir George Sheikens by  
 his permission - Caught only 2  
 Salmon 4<sup>th</sup> & 5<sup>th</sup> - Rail to  
 Riviere au Loup and boat up the  
 Saguenay river to Chicoutimi &  
 back to Quebec - Rail to New York  
 by Quebec Central & Connecting -  
 During the time Rosa & Emma had  
 measles & I was sick a few days  
 as well as Emma - Emma so  
 sick we had a lot to get her home  
 416. S. E. Mfg. Co. of New York Aug 1<sup>st</sup> 1894.  
 Hand and Cribble Laying Machine and  
 rollers in Broadway between 22<sup>nd</sup> & 26<sup>th</sup>  
 Street - Buildings being pulled down  
 for Central Station in 26<sup>th</sup> Street -  
 Laying being delayed by not having  
 enough sheet piling at a time -

417. Bergman & Co. Aug 1<sup>st</sup> 1894.  
 Gave notification of passing of dividend  
 for July 1<sup>st</sup> owing to heavy drafts by  
 the United S. Mfg. Co.  
 418. The S. United Mfg. Co. Aug 1<sup>st</sup> 1894.  
 Bergman very much dissatisfied and  
 want remuneration for loan - During  
 my absence board passed rule for all  
 plans to be put up with Bergman  
 fixtures or not at all - Reproved  
 the light C. of such action and Chas. J.  
 T.M. Order we now trying to come to  
 some equitable arrangement to suit  
 Bergman.  
 419. New Lamp. Aug 1<sup>st</sup> 1894.  
 I learn from Odium that the new  
 lamp is showing up decidedly  
 better than we expected having already  
 attained an average of 1000 hours  
 & some to break yet. 15<sup>th</sup> to the H.P.  
 420. S. E. Light Co. of Chicago Ill. Aug 1<sup>st</sup> 1894.  
 This Co. paid the interest on the  
 bonds today.  
 421. Sprague Electric Patent. Aug 1<sup>st</sup> 1894.  
 Hand Standard today for writing  
 Patent. Sprague 21.85  
 422. Odium new laboratory Aug 4<sup>th</sup> 1894.  
 The brick work on this is done up to  
 top of window of first floor.

Mr. Odium has added other building which Mr. Laft (the architect who succeed Mr. Hodge) is now designing. Odium not satisfied with Hodge's supervision - Commit the mason contractor doing bad work - Everything now being inspected by Laft.

423

Plague French patients.

Ordered Brandon et Fil to work

168123, 168122, 168121, 168694,

169153. The first 3 Sept 4 -

the 4<sup>th</sup> on Sept 26 - the 5<sup>th</sup> on

Oct 6<sup>th</sup> the 4<sup>th</sup> on.

424

S. M. Wares

Aug 5 1878

Spent all day at Schenectady, N.Y.  
in new 500 amp. and 48 amp. dynamo.

425

Oiled paper insulation.

I find at Schenectady that the insulation of the buried oil paper has deteriorated to such an extent that it is no good at all. To speak goes easily through it anywhere and armatures (Alumina) made with it burn out as fast as made have brought some samples of paper here and instructed Walter & Co. to find out what is cause.

Ten Nine month  
 Genl Exp. 20  $\frac{100}{100}$  %  
 Depreciation 5%  
 Borrowing cost etc 506%  
 Total Sales \$1439, 167-58  
 Profit (Gross) \$141,260.60  
 Losses \$3847.94

426<sup>1</sup> Balance Sheet of the C. M. Works.  
 July 1<sup>st</sup> 1884

148,820.00	Acc. Receivable	
400,949.62	Libry Material	
63,749.76	Raw Material	
2,112.92	Debt Cash	
8,050.68	Cash	
501,920.77	Macl. & Tool.	
18,183.34	Ins. & Fire	
24,292.99	Patent Gp.	
161,493.87	Real Estate	
	Acc payable	166,926.01
	Profit & Loss	184,050.00
	Due payable	272,098.87
2,123.32	Horse & Trucks	
2,072.73	Patent	
	J. A. E. Loan	120,560.62
3,265.62	C. C. for Int Stock	
338,400.00	Good Will & Patent	
466.77	Bonding	
2,381.87	Insurance	
17,500.00	Gen. Exp. Co.	
	Capital	750,000.00
	C. C. Light & London	33,333.33
	C. C. for Int. Loan	500.00
2,267.11	Genl Exp July 1 <sup>st</sup>	
207.00	Expenses	
\$1,351,272.77		1,351,272.77

Re. Amature Cold 00873 ohms

" " hot 00795 "

Increase 4.0% -

Temperature Amature (Cold) 28.5°C

" " hot 13.4°C

Re Magnet Cold 22.2

" " hot 26.12. Increase 17%

Magn. base res. Cold 200,000 ohms

" " hot 455,000 "

Amature Cold 4 meg.

hot 700,000 ohms.

Working figures for this machine are given  
in my dynamo exp. book at # 132.

There are some faults which when attended to will  
make this test more satisfactory.  
13.4°C for the Amature is bad. It is principally  
caused by the 44 diameters wire which is not  
enough to give considerable heating of one half, even  
ing the field before the other. This will be remedied  
by 4 D wires. I think at least 6% heat reduction  
speed must be increased to 650 or more increasing  
heat of magnet. The heat in amature will also  
be less in magnet. More copper in base  
will also be required.

42% Edgair test on New 500 Ampere  
Dynamo for Central Station, taken

July 27<sup>th</sup> 1889.

Time am.	Temp.	Revol.	V	A	Spd.	Mag.	Remarks.
"	31	25.5	140	400	630	121	1 1/2 hours - no spark
12	32.5	51	"	"	"	"	
1	32.5	55	"	"	"	"	
2	33.5	59	"	"	"	"	
3	33	62.5	"	"	"	"	
4	34	64	"	"	"	127	
5	32	66.5	"	"	500	631	2 1/2 hours -
6	32	70	"	"	"	"	Brush shifted 7/8"
7	31.5	72	"	"	"	"	no spark, no adjust-
8	31	73.5	"	"	"	"	ment. Slightly heating
9	31.5	73.5	"	"	"	"	warm -
10	29.5	73.5	"	"	"	"	
11	29	75	"	"	550	645 140	5 1/2 hrs. no sparking -
12	28	74	"	"	"	"	3 adjustments of brushes
1 AM	29.5	73.5	"	"	"	"	Adjusted magnet in
2	29.5	76.5	"	"	"	"	multiple arc.
3	28.5	77	"	"	"	"	
4	28.5	77.5	"	"	"	136	
5	28.5	77.1	"	"	500	640 138	4 1/2 hrs. high base the
6	28.5	76	"	"	"	"	last 2 hrs - constant
7	29	75.5	"	"	"	"	spark though small.
8	28	76	"	"	"	"	
9	28	75.5	"	"	"	"	
10	29.5	77	"	"	"	"	
11	29.5	77	"	"	"	"	



was run at 2000 for 5 hours and heated to  
 74° C in a room of 31° C. increase 43° C  
 - When cooling allowed for probably 85° C -  
 A regular wind 46 amature at 1500  
 revolutions with 250 volt. was run -  
 getting about same heating effect as steam  
 former (for same wire) wound at 2000 lbs  
 and yet not getting same cooling effect  
 of speed - Heated without load to  
 70° C in a room of 30° C - 60° increase

Oliver & Swan O. B. & Co.

Balance sheet June 30<sup>th</sup> 1894.

Share -

Dr.

17,139 A	£5 each full paid	£85,696.	0.0
89,261 A	" " £3 "	267,783.	0.0
23,564 B	" " part paid	117,120.	0.0
Surplus	Ord. balance.	5,999.	6.2
24.1.	1896 June 20.		24.5.6
24.1.	1894. "		16221.14.8
			£293,545-9-4

The B share are entitled to  $\frac{1}{2}$  profit after  
 a cumulative preferential div. of 4% has  
 been paid to A shares. - The amount now  
 £440,630-14-8 - £40 paid out of future  
 profits

Cor

Cost of Plant, Goodwill, Prelimi-  
 nary outlay, Res. on working. gr.  
 In last balance sheet.

£298,550-0-4

Further expenditure *£4467-4-7*  
 Less Sale of a plant *£302.821-10-2*  
*117720 " 0 " 0*  
 B. Share issuing  
 Reduced fig. *£21,991-4-7*  
 Less Mortg *14,500* } *13,691 " 4 " 7*  
 Install " a Mortgage *2,794 " 15 " 6*  
 Plant & Stock *30,645 " 0 " 6*  
 Office furniture *1,057 " 13 " 5*  
 Fictors *12,946 " 10 " 11*  
 Cash *014 174 " 1 " 5*  
*£491.343 - 0 " 4*

*Profit & Loss a/c*

*Dr.*  
 Stock June 30 1886. *£15,001 " 18 " 9*  
 Wages, purchase, install. *37159 " 2 " 8*  
 Salaries, fees, rent, exp. }  
 Ins. etc. for directors for 1886 } *6914 " 6 " 1*  
 Salary 5 Mr. Swan. *600 " 0 " 0*  
 Depreciation on Plant & ch. *3291 " 18 " 0*  
 Withdra " rent, Rents etc }  
 & loss on personal *3,000 " 7 " 12*  
 Int. on Mortg *293 " 15 " 2*  
 Bal. being profit *16,221 " 17 " 8*  
*£21,066 " 1 " 2*  
 Sale Lamp, work done *£6,8716 " 14 " 11 Cr.*  
 Royal. H. & Rawson *4217 " 14 " 0*  
 Interest *243 " 9 " 3*  
 Stock June 30 1887 *12,846 " 0 " 0*  
*£13,066 " 1 " 2*



# PROLONGED PATENT CASE. A DECISION REACHED AFTER YEARS OF LITIGATION.

TRINITY, N. J., Aug. 13.—In 1877 John J. Bama, of Haverhill, patented an improved process for preventing rust during transportation and storage by surrounding it in a covering of waxy material and subjecting it to a continuous current of cold air. The patent is run for 15 years. The patent, in claim, was brought upon shortly afterwards by R. W. Gilchrist, M. H. Gilchrist, D. H. Moore, and the General Shavers Company. His request Clarence A. Seward, Justice Lowell, and William M. Davis in fact them in the courts, and a protracted litigation was waged against them. In 1887 they began suit in the Supreme Court, and the litigation since that time has been continued, and it is now one of the longest running cases in the history of the law.

Justice Lowell claimed that under the United States patent law, the inventor of a process or method of doing business is entitled to the same protection as the inventor of a machine or article of manufacture. He claimed that the invention was a process, and that the inventor was entitled to the same protection as the inventor of a machine or article of manufacture. He claimed that the invention was a process, and that the inventor was entitled to the same protection as the inventor of a machine or article of manufacture.

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451 Ans. Edwin Sledge Aug 11<sup>th</sup> 1899  
I spent the 10<sup>th</sup> and 11<sup>th</sup> at Altona, N.  
at this meeting

432 Aug. 12<sup>th</sup> 1899.

## Edwin Sledge & Gold.

Prof. Barker and I dined at Edwin Knight & Left him. During the evening Edwin asked Barker how they found out that Edwinder of Gold existed, as he said he believed there was no such thing. He said he had powdered the so-called Edwinder very fine so that it would go through 150 mesh (sieve), and then washed it well and placed it in a flask of glass and separated gold that was so fine that it was microscopic. This he separated and the residue he found no gold in at all.

433 Edwin Sledge (Gold) Aug. 14 1899

Decision in the reparation case was given by Justice Bradley, as per cutting. This we expected would be in our favor.

454 Paramagnetic Engine Aug 16 1899

The finished engine has been filed and Prof. Barker reads a paper on it before the A.A.A.S. today. This was shown at 323 364 & 373.

# PROLONGED PATENT CASE.

A DECISION REACHED AFTER YEARS OF LITIGATION.

THURSDAY, N. Y. Aug. 13.—In 1877 John J. Hanna, of Hamilton, patented an improved process for preserving meat during transportation.

He soon began to monopolize it in a covering of woven material and early in the century was shortly afterward by R. W. Olmsted, H. H. Collins, D. E. Sherman, and the United Fruit Company. He engaged Clarence A. Howard, Judge Lowell, and William H. Foster to fight them in the courts, and a protracted litigation was waged.

John J. Hanna, who appeared in court and secured a verdict in his favor, died in 1890. He was one of the great men of the century.

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431 Ans. Edison's Invention Aug 11<sup>th</sup> 1889  
I spent the 10<sup>th</sup> and 11<sup>th</sup> at Altona, N. Y.  
at his meeting

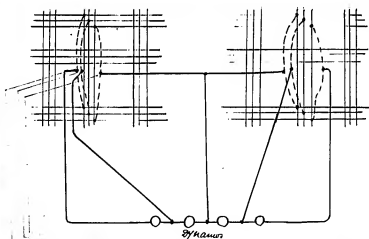
432 Edison's Gold Aug. 12<sup>th</sup> 1889

My. Barker and I dined at Edison's  
Knight & Left there. During the  
evening Edison asked Barker how  
they found out that Edison's Gold  
existed, as he said he believed there  
was no such thing. He said he  
had powdered the so-called Edison's  
Gold very fine so that it would go  
through 150 mesh (sieve), and then  
washed it well and placed it in  
a flask of glass and separated  
gold that was so fine that it was  
microscopic. This he separated  
and the residue he found no gold  
in at all

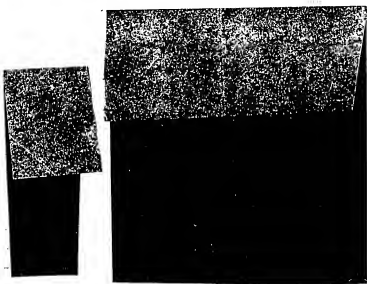
433 Edison's Patent (Gold) Aug 14 1889  
Discussion in the registration case  
was given by Justice Bradley as  
per cutting. This we expected  
would be in our favor.

434 Paramagnetic Engine Aug 14 1889  
The finished engine has been  
built and My. Barker reads a  
paper on it before the A. A. S. today  
This was shown at 323 344 & 373.





-60  
all inside



Asbestos on the 20<sup>th</sup> & No. 9 & 10 came down  
this morning leaving them here

440 Edison Wiring Co. Aug 28 1899  
(Received) Certificate of stock worth 25%  
paid from the Company

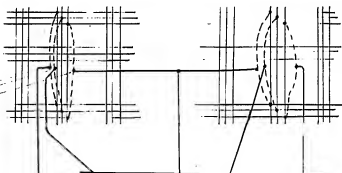
441 Distribution for Light  
Edison sent Paul another method of dis-  
tribution as shown by sketch - This  
does away with a substation for working  
outlying districts

442 C.M.V. Schenck Aug 26. 1899  
Came to Schenck today. 25<sup>th</sup> at 11 p.m. & have  
been here all day

443 Oiled (Lenses) paper  
I ordered the paper fixed up in which  
they make our paper so that no dust  
will interfere with the proper surface of it  
(I find that all the paper they make is  
bad) by slipping twice they get a  
little better and by slipping three times  
it is still better but not so much slipping  
I become too brittle to work. It finds  
that if heated to 110° between two plates  
a number of times it gets better every  
time

444 Cap Connection

I have designed a new cap connection  
for the 580 Ampers dynamo - The wire  
each have a hole & are in direct contact  
with the Center of Cap.



Asparting on the 20<sup>th</sup> & 21<sup>st</sup> Q & O came down  
this morning leaving him here

440 Edison Wiring Co. Aug 23 1889  
Received Certificate of stock with 25%  
paid from the Company

441 Distribution for Light  
Edison sent Paul another method of dis-  
tribution as shown by sketch - This  
does away with a substation for working  
outlying districts

442 S.M.V. Schenectady Aug 26. 1889  
Came to Schenectady. 25<sup>th</sup> at 11 p.m. & have  
been here all day

443 Oiled (Kerosene) paper  
I ordered the paper forced up in which  
they make our paper so that no dust  
will interfere with the paper surface of it  
(and that all the paper they make is  
bad) by dipping twice they get it a  
little better and by dipping three times  
it is still better but with so much dipping  
it becomes too brittle to work. He finds  
that if heated to 110° between two plates  
a number of times it gets better every  
time

444 Cap Connection  
I have designed a new cap connection  
for the 500 ampere dynamo - The wire  
each have a hole & are in direct contact  
with the center of cap.

each is packed solid. Better connection  
is made by the steel clamp which is  
sprung by the cap being slotted.

445

Dynamos

See photograph of one of our dynamos  
as it is made today.

446

Hopalong

Aug 29, 1889.

Spent 24<sup>th</sup> & 26<sup>th</sup> at Hopalong and Rosa &  
the children.

447

Mini IronAug. 30<sup>th</sup> 1889.

Meeting at 40 Wall St. - James J.  
Hewson, Commissioner & his Co. Subject  
206 Iron. It takes 500 tons in two years.  
My guarantee '006, any quantity up  
to 100 tons each 3 months if wanted and  
1/8¢ per lb. payment. 60 d. note  
25¢ of each month for month premium.

448

Municipal 44 Caspers 1889Sept 1<sup>st</sup>

Made a 24 hour run also an extra  
load test also a piercing test  
all of which are in #456 further on.

*The B. M. W.*  
*Salary Balance July 31, 1894*

432.54	46	Labor Material		
55.45	61	Raw		
159.56	62	Netty Coal		
		Coal	965	34
304.98	91	Mach. & Tool		
16.74	96	Furn. & Fix.		
24.81	98	Station		
165.16	99	Rent Cr. Thru B.		
12.30	32	Gas Exp. pay.		
		Acc. payable	174.82	38
		Imp. Hen	178.77	44
		Bills pay.	261.21	93
463.24		Testing Gp		
142.60	59	Acc. Receivable		
2.16	32	Horse Trucks		
2.07	93	Patent of		
348.20		Experimental		
		L. A. E. Loan Gp	120.86	62
		Yamasee Bank Loan	120.00	00
481.88		L. A. E. Labor Gp		
3.26	60	E. C. for Int. H. W. Gp		
338.40	00	Goodwill & Patent		
2.38	81	Insurance		
27.00	00	E. C. Mfg. Co.		
		Capital Gp.	950.00	00
		E. C. & Anderson H. C.	33.55	53
		E. C. for Int. Light. H. W.	500.00	00
447.77		Strong Gp		
1516.77	62		8,826.77	62

450. Le Chat.

Sept. 2 1884.

Spent Aug 31<sup>st</sup> + Sept 1<sup>st</sup> at Schenck's  
on Municipal Hygiene and Sanitation  
with Jenks + Sturinger

451HopalongSept 5<sup>th</sup>

Spent 3<sup>rd</sup> + 4<sup>th</sup> with Koa + children at  
Lake Hopalong - met his Hottel's wife  
there, 'great fisherman'!

452. JLe Chat.

Have got Le Grand Harris at Menlo Park  
where he is fitting up the Eng Brick  
building to make the oil & paper that  
we use on armatures. He intend to  
make also kymograph paper and  
condensor paper as well as anything  
else that came along.

453. JOrange LaboratorySept 5<sup>th</sup> 1884.

Spent all day at Edison house on  
Laboratory work -

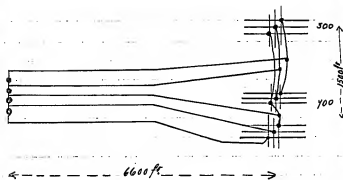
454Manufacturing

Edison's idea now for the future is to  
get up process for manufacture + start  
factories - He has corresponded with  
David Morgan the about it and he thinks  
they will take it and take it up. It is  
anyway formed that can be drawn on  
for \$25,000,000 in 25 years but only.



Such money called up as is actually necessary for the present invention - He claims the right to take (foreign) all his inventions except On milling, Monopoly,

He proposes to buy a 30 acre tract of land on the small R.R. that runs from Starke to Orange and gradually cover it up with new manufacturing industries. He spoke of two that are now ready to go right into it on which farm what he says and from his application for patent I should say he has been working on a long time - 1<sup>st</sup> Drawing fine wire such as is now imported by annealing in a vacuum or hydrogen gas between coal drawing operation. 2<sup>nd</sup> Depositing metals in a vacuum by heating them to decomposition ('or the like') in articles placed in the chamber to be deposited on. This would take the place of electroplating and any metal or any alloy of a metal could be equally well deposited - Immediately the new laboratory is finished, this will be commenced in earnest.



435. Three wire system of lighting Sept 5<sup>th</sup> 1897.  
 Near same distances of 300 and 700  
 the following condition:-

Watts power - 6600 ft away from center of  
 work - 1000 lights - 700 in one mile and  
 300 in another 1500 ft away -  
 By obtaining two three wire system in series  
 or four wire system the cost, roughly of  
 machines would be

4 Mch. 150 v. + 150 a. \$2240

Conductors:- outside wires 20% drop  
 inside 1/2 size

\$2360  
 \$4600

436 Universal Dynamo test Sept 5<sup>th</sup> 1897  
 4 1/2 Amp. 1200 Watts 700 speed.

\*1 Dynamo - \*1 Armature -

Magnet res. 1318 ohms at 15.5°C 108

" Base 1 meg.

" res. hot after run 1574 ohms

" base hot 5 meg.

Armature res. 584 ohms at 18.5°C

" Base 1 meg.

" res. hot after run 589

" base " " 200,000 - this 9th

better after every run -

Run: Aug 31<sup>st</sup> 1897 9:15 a.m. to 9:15 a.m. Sept 1

Temp. air 18°C to 21.5°C. vacuum

Temp. armature - 98°C full heat in

9 hours. Taken at 10°C in 40 min.

height it reached 102 in 20 min -  
 stopped 1 hour and then put on 60 amp  
 and 1200 Volts for 2 hours  
 Temp 109.5°

Now the Mach. was tested for sudden current variations.

During the first 20 min the machine ran without a spark also when it had the overload.

At the end of this we put a load of 16 amp. on the mach. and broke the wire by clipping it in two - there was hardly any spark -

Then the whole load was thrown off in the same way. Brushing sparked good deal this time but it was quickly adjusted -

This experiment repeated -

The field was now broken (2001 + 160) without doing any damage - the spark on this was quite small - this is least to the copper spools on the magnets.

No movement of the brushes for different loads was:

Up.	$\frac{1}{16}$ "	for 12 amp.
"	$\frac{5}{16}$ "	24 "
"	$\frac{1}{2}$ "	36 "
"	$1\frac{1}{2}$ "	48 "
"	$1\frac{3}{4}$ "	60 "

on a radius of  $4\frac{1}{2}$ " -

Base measurement after all test - for 1000 hrs.

Charles Batchelor Journal, Cat. 1337

This journal covers the period September 7, 1887-December 31, 1892 and contains numbered entries by Batchelor about his business and personal affairs. Included along with the journal entries are newspaper clippings, photographs, sketches, and three kinetograph film samples. The material relates primarily to the experiments of Edison and Batchelor with electric light and power, electric railways, phonographs, and ore milling. Most of the entries for 1892 are about the ore milling operation at Ogden, New Jersey. Among the other subjects mentioned are the construction and operation of the West Orange laboratory, Edison's health, and his trip to Europe (a number of news clippings about the trip are included). The book also contains financial accounts of the Edison Phonograph Works for 1889-1891 and some entries concerning Batchelor's vacation trips to the United Kingdom, France, and Germany. The book contains 288 numbered pages. A photograph and twelve pages from a pocket notebook, covering the period March 1889-August 1893, are interfiled between pages 220-221.

Blank pages not filmed: 220-249, 252-257, 260-288.

Missing page numbers: 135-136, 139-140, 143-146.

457. Pine The C.M.S. store room caught  
fire at 9 p.m. Sept 6<sup>th</sup>. All wood work  
in store burned and one horse  
but no supplies - Cause gasoline  
and a light.

458. Edison U. Light Co

New price list:

Dynamos	1	2	3	4	6	8
No of lamps	40	75	115	150	225	300
Elec. outfit	\$900.0	\$1075.0	\$1185.0	\$1315.0	\$1655.0	\$2411.0
Eng. outfit	\$485	\$530	\$530	\$610	\$685	\$810

Dynamos	10	12	16	20		
No of lamps	375	450	600	750		
Elec. outfit	\$2900.0	\$3225.0	\$4525.0	\$5540.0		
Eng. outfit	\$900	\$985	\$1200	\$1360		

The Electric outfit consists of Dynamos,  
lamps, regulator, Amp. meter, indicator  
base frame, 7 sockets.

Engine outfit = engine, foundation  
box and foundation. (approx.)

These prices will allow a discount of  
37 1/2% off list that with 15% & the  
agent still leaves Co 20% profit

459. New Lamp.

The first lamp of 15 b. class, H.P.  
shipped to the U. S. C. about Sept  
1st 1894. 1500 w. number.

460. Progress C.P.M. Co. Sept 8 1894

My resignation from the Board of direc-  
tors accepted today by letter.

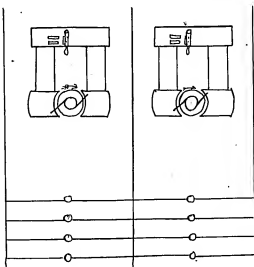
461. Election to H.P. Co.

Meeting of board - Johnson and I appoint  
Committee to see Dean and pick for  
position of Genl Mgr.

462. Defect in Return System

Two Cases have come under my notice  
(worthy of notice) where two machines  
in series have been running on 1 wire  
system, and one has been reversed, by  
thus turning it into a two wire system  
of which the neutral wire carries the load  
for both. As the neutral is generally  
made smaller it is obvious this is very  
dangerous and in all installations an  
ampere meter on the neutral is essential  
This is most likely to occur by reason of  
the brushes being lifted up accidentally  
 whilst running - Or when starting  
up the plant the brushes of one  
dynamo may be set on some time

before the other than reversing one magnet,  
which owing to the low resistance made by  
the lamps on its side cannot reverse easily.  
Diagram shows the direction of current -  
red line shows direction of current -  
if one brush is held up. -



462. Tests Hydrobromic Sep. 12, 1884.  
 Went 9, 10, & 11, as the lake was all  
 returned this morning to city.  
 Met Mr Dunlop the latter time

463. Municipal Lamp.

Photograph of the Municipal Lamp as  
 made by J. W. & Co. of  
 Aug 6<sup>th</sup> 84  
 and about  
 150 tested  
 by Batchelor  
 Jennings and  
 Jenks.

Principle -  
 The entire vase  
 is made of  
 iron very fine  
 except where  
 it passes through  
 the glass, which  
 is platinum. The iron wire holds a con-  
 tact plate up against a spring and keeps  
 it from touching bottom cap. When carbon  
 breaks the current passes along the wire  
 wire fusing (or heating) it. This allows  
 the spring to push it down into contact  
 thus closing the circuit.



464. Sept 13 1884.

Insulated Wire  
 Olsen showed me an  
 insulated wire that he  
 had prepared. The insu-  
 lation consisting of per-  
 oxide lead and covered  
 all. It can be made of

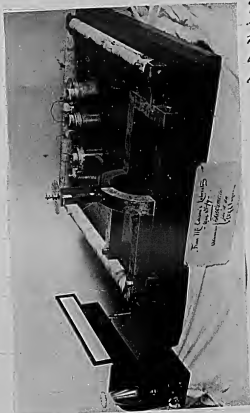
any consistency from  
 quite fluid to a paste and can be put  
 on the wire either before or after the  
 cotton insulation - It does not burn -  
 the peroxide is changed to litharge by  
 giving up some oxygen. This is taken  
 up by the oil thus oxidizing it.

He also made another insulation  
 by taking rubber (in benzole partially  
 dissolved) and kneading it well with  
 a very large percentage of Karbon.  
 This can be put on the outside of a  
 cotton insulation as thick as necessary  
 after which it can be covered with  
 plaster - Both these insulations are  
 excellent as regards moisture test -  
 they both stand the fire test owing to  
 the large quantity of Karbon in the one  
 and porous in the other. They both  
 will stand any amount of bending  
 without fracture to the insulation -

465. Magnetic Bridge

A paper on this was just read before  
the Amer. Ass. for the advancement

of Science  
by Prof.  
Harker  
in August  
1884.

466.



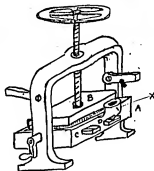
467. Hannover Supply Co. Sept 14 1887  
 Fisher, Taylor, and I met at U.S.C. office  
 with H.P. Childs the manager.  
 Oct. began good trade and the place well  
 stocked with everything - It looks  
 good but we must wait until May  
 before we can determine how good it  
 is - No stock has yet been cleared  
 but \$4500 has been paid in as follows:

Fisher	\$3000
Batchelor	2000
L Taylor	1000
P. Sumell	500
J. Russell	500
H.P. Rawson	500

Taylor and Co. will take about \$3000  
 and I will take another \$1000. This  
 will probably see us through the first  
 year.

#### 468. Casting Zinc

I went and saw Taylor's process for  
 casting our zinc - It is good - the  
 casts in an iron mould which is  
 provided with expansion or rather  
 contraction pieces - These pieces are  
 loosened as soon as the metal sets  
 and prevent the zinc from crack-  
 ing by contraction.



This is the idea  
 A is the mould which  
 with B down has its  
 inside made to shape  
 of the zinc to be cast.  
 C and D are two sets of keys  
 tapered to drive out  
 easy - The metal is  
 poured in at X and  
 as soon as it sets the keys are loosened  
 and the screw raised up; after a couple  
 seconds the keys are driven out and the  
 screw run up. The bottom die A is  
 now turned over and the zinc drops  
 out - Old method of moulding in  
 sand 4 per day @ 70¢ by the method  
 you can take the cast of mould every  
 4 minutes

469. Edison Limited Sept 15 1887  
 Meeting of board of directors made  
 call of \$2000 from each ship - Two or  
 three plants that have been worked on  
 for years can now be closed but at the  
 old price, agreed to take them although  
 we decided in future close up ~~plants~~  
 money on any plant - adjourned until  
 tomorrow -

470. New Lamp.

The manufacture of the carbon for new lamp will be carried on by a separate factory and they will be sold to the lamp Co at a profit. This profit will be divided between the original holders of lamp Co stock. Edison is now putting up a factory 200' x 25' on the land of the Greenwood Lake R.R. to manufacture these carbons in. The process will be kept a secret and not patented.

471. Dynamo & engine for navy.

Next hundred say the navy department want the following:-

Dynamo:- Compound wound - to yield 80 volt 30 amp at 500 revolutions - not to exceed 500 pounds. Floor space not to exceed 4 square feet. Height not more than 3 feet. It should have no external field connection & engine direct on rigid iron bedplate. Dynamo to be electrically insulated from bedplate and engine. No bearing between armature and engine.

Engine:- One automatic regulation for constant speed. To indicate &

U.P. with 80 A. steam at piston - height 150 lb. - Floor space 4 square feet and height 3 feet. To work when exhausting into condenser or atmosphere. Bedplate bolted to deck. Total height 500 lb. and 8 square feet. These data are very exacting. I will however figure it out.

472.

S. McLaughlin.Sept 17<sup>th</sup> 1887

McLaughlin is here from California. He is working up a scheme for selling property in Butte Co.

Cal. He calls the town Mineralia. I cut this from the World of 16<sup>th</sup>

but as far as I know there is no truth in it.

Thomas A. Edison, the famous inventor, will spend the winter in California, near Reno. It is reported that he will build a winter home at Thermaito, Butte County, Cal., and erect a fine library. For several years he has been experimenting with specimens of the black sand deposit found in that country, endeavoring to extract gold there.

473.

Edison United Light Co.

Lamp renewal paid to the C. C. Light Co.

Dec 1886 - Jan, Feb,

Mar, Apr, May, June, July, Aug,

\$36,096.84

\$25,949.49.

474.

New Lamp.

M<sup>r</sup> Green & son Harrington sailed for the Amazon by S. S. Alliance Apr 10<sup>th</sup> & hunt for Edison.

446. Orange Laboratory Sept 19 1887  
Commenced to take charge of the construction and installation of the new laboratory. First piece of machinery (one boiler) has arrived - Main building has half the roof on. Metallurgical building well on up and waiting roof - Foundations for Chemical and Woodworking are complete and the latter has walls about 1 foot high - H<sub>2</sub>O is dug for Galvanometer building ready to commence. Gas machine comes this week.

447. Magnetic Bridges  
R. Buckenmeyer of Yankers N.Y. writes to the Electrical Review of Aug 10<sup>th</sup> 1887 and sends a paper on his subject which he intended to read before the Electric Club. Full paper appears in it with cut under date of Aug 27 1887. Apparently proves that Prof. Anthony has had the paper since May of present year -



448. Edg.'s house.  
Roa. And children at Edg.'s house 23<sup>rd</sup> 24 and 25<sup>th</sup>.

449. Supermagnetic Dynamo Sept 26 1887  
In Electrical Review of Sept 26<sup>th</sup> N.Y.

After 517 Leane St. Phila. Claims to have made practically same thing as Edison for a motor. And says he brought the result of his investigation before a Committee of Science of Arts of the Franklin Inst. in winter 1884-5 and filed patent - Idea of producing Electricity by same means also occurred - he was deterred by excessive oxidation - says he has now overcome this difficulty - refers to Prof. Gore's Exp. Phil. Trans. Vol 40 - p. 113 1870 on "magnetic changes of em by heat."

449. Edison United Refg Co  
This Co. have decided to give 45% off the last price list (see 458) This with 15% off to agents will still leave this company about 100% profit over their price. Nipman, Hunt, J, Tate, & Edison met and decided to give another 1/4% to C. U. Refg Co off present prices, this to be done by deducting 1/4% off on note, when paid and to commence from bills dated Sept 27<sup>th</sup> 1887.

480. *Dynamics. Comparison of two capacities*  
*price etc.*

Type	N <sup>o</sup>	Year	Watts input	Watts out	Watts input	Watts out	Ch. per hour	Price per hour	
Edison	1	1900	350	1,100	2500	47			
Edison	3	1700	1000		7500	1200			
Edison	6	1500	2130		15000	1920			
Edison	10	1300	3870		25000	2070			
Edison	16	1000	6800		40000	4070			
Edison	20	800	9790		50000	6110			
Schuyler	2	1000	990	1,100	2400				
"	5	960	2794	1,425	11700				
"	8	450	7700	1,130	29000				

This is the best

481. *Yachting*Sept 20<sup>th</sup> 1884

International yacht race - *Stella* v.  
*Volunteer*. This is the second race of the  
 two out of three - Both races were won by  
 the *Volunteer* and the *Cap* that was  
 brought from England by the American in  
 the *Stella* stays here

## 482.

Oct 3<sup>rd</sup> 1884

My brother *Sam* arrived by *Stella* today  
 and leaves for Canada on the 5<sup>th</sup>

Oct 6<sup>th</sup> 1884

Spent Wednesday at Schuyler today with  
 him - Introduced him to J.A.C. on 4<sup>th</sup>

## 483.

*Electric Light Companies* combine Oct 6<sup>th</sup> 1884  
 The *Huntington* and *Hampson* companies  
 have made a working arrangement to  
 make them stronger & fight the  
 patent Edison has had granted  
 that is the patent for working lamps  
 or motors in multiple arc

## 484.

*Edison's Orange Laboratory* Oct 7<sup>th</sup> 1884  
 Laboratory so that we can now begin to  
 work - Mason den building & 30 feet of  
 chimney - Two small buildings done -  
 Edison told me he  
 had a mortgage on  
 J. & K. 1000

WANTED - Two men to work on the Edison  
 Laboratory, Green, N. J. 1000



488. Current MetersOct. 11<sup>th</sup> 1887

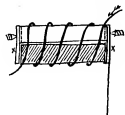
Head Mfg. Works at the Institute of Electrical Eng. He described & showed his current meter. It works by the convection current of air heated by the current passing through the wire of a flat spiral. This heated air turns a paddle wheel which registers on a clockwork.

Points of interest:-

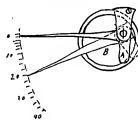
- 1<sup>st</sup>. It seems to work equally well and regularly when the whole apparatus is heated up by 20 amperes or by 1.
- 2<sup>nd</sup>. Everything about it is very light and hung delicately. It is therefore an instrument difficult to ship and not liable to get the best of usage in the hands of such men as we have in our plant.
- 3<sup>rd</sup>. From 2 to 1 amp it is irregular but from that to 20 amp it makes a straight line when showing the ratio of current to speed of rotation.
- 4<sup>th</sup>. Equally good for straight or alternating current.
- 5<sup>th</sup>. Angle of frame, about  $45^\circ$ , and key about  $16\frac{1}{2}''$  above spiral for best working.
- 6<sup>th</sup>. Glass globe should be long enough to stand at least  $6''$

higher than the top of instrument.

1<sup>st</sup>. Source of error. When used a long time the bridge & clockwork will get heated and after the current has passed out the mass of hot metal will form convection currents which will tend to keep the hands running after

489. Current Meter (Water Power)

magnetics both equally and as both have



an iron core is cut longitudinally, and another piece lays loosely in it on pivots and provided with a flag at each end. These flags overhang the core end - the one a north pole the other a south pole which causes the movement of the needle.

490. Thermograph.Oct. 15<sup>th</sup> 1887

Ellam put the management of the Thermograph into C. F. Gilliland's hands for America about two weeks ago. He took a factory in Bloomfield, N.J., and he is now ready to manufacture

491 Schenck Oct 15<sup>th</sup> 1887  
 When yesterday wanted me to go into a small land syndicate up in Schenck with him, Lums, Lums, Lums and himself - Amount at present wanted May 1888 - told him I would do so and he could call for the money whenever he wanted -

492

Marque & R. T. Mott Co. Stock Oct 17<sup>th</sup>  
 Sold 20 shares at \$80 to Bergmann.

493

Magnetism (Theory) Oct 18<sup>th</sup> 1887  
 Theories of magnetism whether 'current' cause the 'magnetic' or 'the entire theory' do not show why the metals iron and steel should be practically the only magnetic metals - I think a study of all the different properties of the different metals should lead to some point in iron that are distinctly peculiar to that metal - For the purpose I shall make a table and when finished shall enter it here.

494

Edison Mining Co. Oct 22<sup>nd</sup> 1887  
 This company has made a further call of 10% making 35% of subscription called in

495

Edison United Co.  
 C. F. wants to replace himself by D. H. Bates of the B. & O. Telegraph, this I have objected to very strongly in a letter to him on the ground that it is injudicious to make such a change without having some previous experience (say six months work in some important part of our territory) with him or whoever else might be an applicant. notwithstanding my objection I am informed he has appointed an interview with Bates, Chapman, Bergmann & himself at the office - I have got Edison to write C. F. a letter disapproving of the appointment of D. H. B. and have written Chapman (my informant) that I disapprove and shall not attend

496

Australian Electric Light & S. Co.  
 Balance sheet 31<sup>st</sup> Dec 1886.  
 Loss for year 1886. £4,844-9-6.  
 Mercur. loss. £3,916-14-11  
 £3,716-14-5

Expenses have been very much reduced and made proportionate to business done. My interest in the Edison Indian Co. & some of the Company is as follows:-





502. The Edison Machine Works Oct 31<sup>st</sup> 1887  
 Board of Directors and Stockholders meeting  
 at 40 Wall St. - Sumner - Office changed from  
 New York to Philadelphia N.Y. Officers for on-  
 coming year J.A. Edison Pres.

Charles Salcheta Secy. Treas.

Wm. Samuel Swan & Genl. Mgr.

Geo. Hutchinson Secy.

- Released Louis Stark and knew off his debt.

- Gave them 2 1/2% (after 10% to stockholders) on  
 profits of this evening

503 The Edison Electric Light Co. Nov 1<sup>st</sup> 1887  
 Edison told me today that the Light Co  
 had talked with him in money and  
 stock for the \$60,000 they were obligated to  
 pay him before they could pay a dividend.  
 This was done Oct 31<sup>st</sup> - I am entitled to  
 10% of this so I expect it.

504 The Universal Supply Co. Nov 1<sup>st</sup> 1887.

June. Sales	\$12,64	Genl. Exp.	\$38.40
July. "	\$108.54	"	\$46.22
Aug. "	\$1061.64	"	\$407.25
Sept. "	\$1960.90	"	\$499.69
Oct. "	"	"	"

505 Hastingsham System

Hastingsham told me today that Hastingsham had  
 gone over to Hastingsham's System and

taken the Man Construction Co as well as  
 Andrews, Spencer, Portland, etc etc with  
 him - That they are delaying very much  
 the Central Station at Columbus O. in  
 consequence

506 Photographs

Nov 5<sup>th</sup> 1887.

I drove over from Orange today with Sale  
 to Montclair to look up property - We  
 called at Bloomfield & saw the new  
 ship for manufacturing photographs -  
 Mr Keller superintends & has about 12 or  
 15 men working on tools etc. They have  
 not received the model from the labora-  
 tory at East Newark yet but expect it  
 every day - They have about 20 new  
 good tools all ready to manufacture -

507 Soliman

Nov 6<sup>th</sup> 1887

Apr 1<sup>st</sup> & date. 15 M 15 F 6 F 6 F 6 F  
 Y M 15 E 15 E 12 E 11 E 11 E 16 E 15 F 1 F 6  
 M 6 M 1 E 6 F 7 F 9 F 15 F & F Y.

508 Orange Laboratory

Nov 10<sup>th</sup> 1887.

Boiler - new, & thick all finished -  
 Brass engine set and piped for steam and  
 exhaust up to boiler & water hot waiting for  
 large steam pipes for boiler & water  
 from water pipes being laid in yard.

Worthington engine beds set up —  
 Dynamometer room flooring & ceiling new —  
 Saws, Stampings, Blasts and dynamo  
 floor masonry all completed —  
 Small room finished by Fairchild except  
 lock on doors etc. —  
 Revised plans & grade of experimental  
 shaft from East Newark —  
 Chemical room floor being laid —  
 Metallurgical floor half laid —  
 Chemical storage room finished —  
 Galvanometer building being roofed —  
 Library — Ceiled — fireplace not begun —  
 Plans not in, railing not in — second  
 floor not in  
 Radiators all ready to connect to steam  
 pipe and pipes all run  
 Lead pipe, all ready, also steam pipe  
 covering, asbestos boxes and blow  
 pipe —  
 Brass girders up but track not here —  
 Gate entrance half built —  
 Gas machines finished but underground  
 pipe work connecting

509

Sprague Patent Nov 10 1887  
 Johnson, J. & Sprague signed the papers  
 attending to J. H. Hoffman and Power  
 of attorney. Contract made July 1<sup>st</sup> 1887.

The patents are:

161009 dated Dec. 11<sup>th</sup> 1884  
 161395 " " 3 1885  
 161121 " April 7 1885  
 161122 " " " "  
 161123 " " " "  
 161697 " May 5 " "  
 169153 " May 26 " "  
 170819 " Aug 25 " "  
 170820 " " " "  
 174045 " Feb 9 1886

Of all the money that the said Hoffman  
 receives, or shall receive or other secu-  
 rities he pays over  $\frac{1}{2}$  to us as follows:  
 $\frac{1}{2}$  to Sprague  
 $\frac{1}{4}$  to C.A.G.  
 $\frac{1}{4}$  to C.B.

510

Photograph

Nov 11<sup>th</sup> 1887

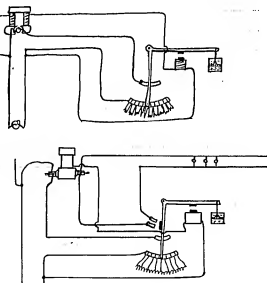
Edison brought the model photograph  
 to the laboratory and exhibited it to  
 a number of members of the National  
 Academy of Sciences who paid him a  
 visit —

511

Patents

Received Watson Patent U.S. 393034 +  
 Assignment to right time — Little  
 Sup. in dynamo electric machines and

relates to starting motors or dynamo motors  
at a distance



512. Edison P. Light Co  
Extract from the M

Nov. 16<sup>th</sup> 1884.

EXECUTIVE OFFICES, MUTUAL LIFE BUILDING,  
25 NASSAU ST., NEW YORK, NOV. 13, 1907.

To the Shareholders of the Consolidated Electric Light  
Company and to the Parents of the Sawyer-Kiss Electric  
Company.

**GENTLEMEN:** The Consolidated Electric Light Company, owner of the Sawyer-Man patent, has, from time to time, received numerous applications for licenses to manufacture and sell the incandescent lamps and other electrical apparatus covered by its patents, which applications it has been constrained to decline.

With the view, however, of utilizing the inventions of others who have achieved success in the electric-lighting field, and at the same time of concentrating and enlarging its business to meet the constantly increasing demand for its apparatus, the Consolidated Electric Light Company has recently completed the following important transactions, which are of interest to its stockholders:

**Pitts**—It has granted to the Thomson-Houston Electric Company a license to manufacture and use incandescent electric lamps and attachments, in plants and stations established by that company in combination with its extensive and popular Arc Lighting System, upon an agreed royalty, and has also entered into a contract with that company, whereby the interests of both companies in the manufacture and sale of electrical apparatus other than that covered by the Sawyer-Man patents, are mutually promoted.

Second—It has purchased from the Westinghouse Electric Company its valuable electric lamp factory and equipment at Pittsburgh, Pa., with a guaranteed capacity of 8,000 incandescent lamps per day, and has entered into an agreement with the Westinghouse Company whereby the purchaser from that company of its alternating apparatus (the most economical and efficient for central station lighting) shall also purchase from the Consolidated Electric Light Company the Sawyer-Man lamps and attachments, for use with said apparatus, and shall have the protection of the Sawyer-Man patents.

Third—It has purchased the stock and assumed the control of the Sawyer-Man Electric Company, which has heretofore been its sole exclusive licensee, and will conduct its commercial department through the agency of the Sawyer-Man Electric Company.

Fourth—It has purchased that valuable and extensive manufacturing and business property, Nos. 810 to 834 West Twenty-third street, in the City of New York, having a front of 125 feet on said street, with floor space of 117,000 square feet ready for use, and with a capacity for the establishment, at that point, of its general offices and of its principal legal, technical manufacturing and commercial departments.

To meet the increasing business demands of the Westinghouse Company, the Thomson-Houston Company, the Sawyer-Man Company and the general public, the Consolidated Electric Light Company will, within a short time, manufacture at its combining facilities at least ten thousand electric lamps with the necessary electrical attachments per day; and this demand, based upon the reputation for excellence which these companies have obtained in their respective fields of usefulness, will greatly enhance the value of its property and will promote the interests of incandescent electric light.

This recognition of the Sawyer-Main patents, and consequent concentration of power in the Consolidated Nitric Acid Company are attended with a corresponding ability on the part of this company to protect itself from infringement of its patents, and steps have recently been taken, in the institution of new suits against infringers and in the vigorous prosecution of those heretofore instituted, which, it is believed, will speedily and effectually secure to the company the additional profits from that source to which it is justly entitled. Very respectfully,

HUGH R. GARDNER,  
Vice-President and General Manager.

Nov 15<sup>th</sup> 1887  
Shaw, Upton, I  
then made the following  
take up the cost

1273, Edison United Co.

Nov 18<sup>th</sup> 1884

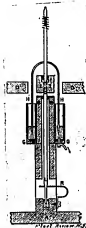
Meeting Chimney, Shaw, Upton, I  
+ Chain - Olson made the following  
proposition - Shaw take up the cost  
Central Station - Bureau - Salary \$200  
per year and allowed to draw \$150  
more on a/c of commission -

Claw to have 22% on sale up to  
\$1,000,000 - 5% of sale reach \$1,000,000  
and 3 1/2% of sale reach \$2,000,000.

He to have office, clerk, stationery etc  
free - and \$2000 per year allowed  
for agents. He built as on to  
own all the and out 5% to the  
United Fr. - Claw wants some  
help to take over the mine and notes  
that he has not and which might give  
him trouble if he left Williamsport.

514. Condens. Meters of Borel & Macdonald

This is supposed to be an  
improvement on one described  
lately by Weston but was  
made by Edison years ago.  
It has a number of pumps  
connected to the shaft which  
dip in the H<sub>2</sub>O Cup and  
through which the current  
passes. To regulate the  
speed he has an extra  
piece of soft iron I found  
above the center pole on a  
spindle which revolves with  
the pumps.



515. Laboratory. Nov 25<sup>th</sup> 1887.  
Edison has been sick for four days  
with cold - Had 80 lb. steam on  
heating and low steam pipes in  
the underground trenches at Laboratory  
and all night - All pipes and tube  
laid and trenches being filled in  
"Patman Co." rather set up on form-  
ation and boiler being set up -  
Belts being put on Brown engine  
and other shaft - Water connected -  
pumps all connected - Boilers all  
had pressure steam on - Water and  
gas meters being put in now

516. Edison Ore Milling Co. Nov 26 1887  
Received from F.C.C. eight hundred  
shares for past services -

517. Laboratory Dec 1<sup>st</sup> 1887.  
Hawley & Gay conductors for lighting  
Edison's, Swanke, two Cushman's have

518. Foot wire system - Dec 1<sup>st</sup> 1887  
Stearns & Dr. Quenton here at Orange N.J.  
today talking over foot wire system  
with Edison - He explained his method  
of throwing over a horse on any side  
from station - Tail, jaws, and

Stearns were at all day yesterday also with J. A. E.

310

Photograph

Dec 2 1887

J. A. E. told me today that the patients were all void during the past that the English patient was pitted previous to the American. It is therefore open to the public and anyone can go in and manufacture -

320

Mr. H. B. Archer

Dec 3, 1887

Tom left Halifax today by train for Liverpool

321

Ophiomys #28 Edin.

Dec 6 1887

140 lbs. 500 Amp. 650 Rev.

Figures same as Dyn. Exp. 132 7. Record 927.

Armaturess - Core 25 5/8" diam. 25 Amp. 15, 17 1/2" bend

96 divisions

Three armatures were made

Hindling

\*1 one 1/4" round wire once round

\*2 four 3/8" Ang. bar one around

\*3 four well rounded square

wire 2 1/2" dia.

Rev. \*1 10000 rpm \*2 10055 \*3 10079 rpm.

m. all cases one leg and 48 beats -

Box of field 15"

\*1 Armature was tested see 742 - 145

\*2 Armature was wound continuously all around and each wire had a #16 wire connected to it. At Commutator end to connect

it to the commutator

\*3 was wound in the ordinary manner and

regular output -

Magnet Core - 17 5/8" dia. 24" long. wound with 700 @ 4 1/2 (400) Revs. 16 1/2 chms. -

Extra 5 1/2 chms. -

The last on #3 Armature showed -

AM. 5:30. 44" <sup>at 1000 rpm</sup> 2500 Rev. M. 16.3 A. 1000 500

Y. 30 2 37' 21" 500

1:30 3 40' 21" 500

9:30 4:35 42' 20" 500

Shut down to field brush, lighter clutch + some -

Start 11:50 1 44' 21" 600

12:50 46 21 600

1:40 48 22 now reduced to 600

2:00 46 22 500

3 47 21 500

3:35 47 21 500

Shut down Temp of Amp 80° at center + 77° at rim

Revs of Amp 1000. Temp case from mc of

Revs 68°

Start 4:45 47 - 23 700

5:45 52 - 24 700

9:45 54 - 26 now reduced to 600

12:45 58 - 22 600

Temp Amp 97 1/2° Magnet 17 1/2° Magnet

bare 1 mag. Am. bar 1 mag.

Temp fuel between in thermocells near arm.

when running -

523. Universal Supply Co. Dec 9<sup>th</sup> 1887.  
 Taylor & Son found that this Co was not being  
 managed economically and we resolved to  
 put in Rawson & manager & if necessary to  
 take it entirely into his own hands.  
 Business falling off & General expenses increasing  
 rapidly each month.

524. Solstans Dec 10<sup>th</sup> 1887  
 Nov. 6 to date 65621RM129F172F3—

526. Automatic Regulators Dec 11 1887  
 Found from a letter from Field that they are  
 still making single resistance regulators  
 for regulating three machines together even  
 when the running of machines is intermittent—  
 when necessitating keeping of all magnets  
 charged even though only one machine is  
 in use.

528. Universal Supply Co. Dec 13<sup>th</sup> 1887  
 Taylor, J. Rawson, Fisher & Child had a meeting  
 result of which was that Child's is manifest  
 and extravagant— He has lost about 5  
 of what we put in— Agreed to take 5000  
 of Taylor & Son's stock at par if Taylor & Son would  
 loan money to U.S. Co. This was not accepted  
 but thought Fisher said and that he will  
 sell me 5000 worth of Taylor & Son's stock

at par and he will put the money into U.S. Co.  
 He will also after Jan 1<sup>st</sup> take hold and run  
 it himself & show us what can be worked up.  
 I have taken that offer & told Fisher to name  
 any time in which he wants to buy the S.T.C.  
 stock back and I will give him the option  
 to do so at same price and further if he can  
 not take it at the time specified I will  
 give Rawson & Taylor the right to take 5  
 each of it at par for a certain time after.  
 I therefore gave Taylor a note for \$1000<sup>00</sup>  
 to make the transaction and return me  
 the balance in cash—

526. The Edison Electric Light Co. Dec 17<sup>th</sup> 1887  
 Liver and Chinnick at Orange talking over  
 United Co. matters with Edison. Edison went  
 for him about Corri Allen and H. Allen of the  
 Secretary— Chinnick said the profits for Nov.  
 were \$2000 including about \$500 which is due  
 to the 4 1/2% reduction in notes given to the shops.

527. Edison House Dec 20, 1887  
 Let up Edison's house longer for first  
 time from laboratory— they are lay down  
 and his house is not too wide system— he  
 catch on in apt.

## 528. Wiring houses.

Dec 20. 1887.

I find that wiring men are bunching wires of same polarity in same groove in houses - It shows they do not know or appreciate the danger of so doing -

Diagram shows two wires of each polarity from dynamo - Both wires from X are bunched above their safety catches A+B. and in bunching they are crossed or partially so at C - In time

a cross occurs at D & if not got out quick perhaps another at E - If C is rubbing contact catch D goes & C springs out & then burns every thing round C whilst A carries the current -

## 529. Notes.

Dec 20 1887

Re: Maxwell's life of S. Johnson 5 vols. in press. for Dec 21<sup>st</sup>.

## 530. Universal Supply Co.

Dec 28<sup>th</sup> 1887.

Fisher, Taylor, Pearson, and I met at the Co's office - He found had met & Fisher had Pearson & W. Pearson had been elected President - He thinks was right in the understanding that he sells on commission from 1<sup>st</sup> Jan 1888 he being allowed 6-10% per month

for his expenses which is to be deducted from his commission - He is to work entirely on new business & is to get 1/2 the profit in all cases - Tomorrow he brings - Fisher takes 1000 worth of the stock to help along.

## 531. Thomas Generators

Jan 2<sup>nd</sup> 1888

Address of Pittsburgh proposes a Thomas battery in which the central rod is kept cool by liquid or by gas -



It will be difficult to get insulation for fire and water and where gas is used it will be difficult to get an insulation that will hold it - A great deal of current will be lost through the medium.

## 532. Taylor &amp; Co.

Jan 10 1888.

Jan 1<sup>st</sup> Statement

Bills 496 Rec.	\$ 8772.87
Cash in Bank & Dep.	16101.97
Overage T. & Co. Drm	7129.00
Charging, H. & Co.	23975.34
Stock & Appl.	15322.61
	<u>\$ 71301.79</u>

Rev. Bills pay. &	\$ 3635.76	<u>16635.76</u>
Notes	13500.00	\$ 34666.03
Interest	2000 in Bank & H. & Co.	13000.00
	2000 in Bank & H. & Co.	<u>\$ 41666.03</u>

Capital Secured \$20000

533 Edison Lamp Co Statement 1<sup>st</sup> Jan 10<sup>th</sup> 1898  
 Net 51<sup>st</sup> Monthly Statement  
 Lamps on hand Dec 31<sup>st</sup> 224,753  
 " Manufacture 81,249 cr. 263,649.91  
30 6002  
 Home shipments 19417  
 Foreign " 14910 85,394 Bury 31,362.29  
 Lamps on hand 220,605.  
 Home orders 89,213  
 Foreign " 116,280  
135,413  
 Bills payable \$774 80.97  
 Billing Glass Mts. 11 478.93  
 Acc<sup>ts</sup> Due 21 665.06  
\$110,639.96  
 Bills recd &c 7168 829.27

534



535 Universal Supply Co Jan 24 1898  
 Fire last night burned out the top  
 part of building & damaged in 4

water & about 5000

Made arrangements at Putnam house to  
 night with Blay & extend both notes that  
 we owe him for one year from date of  
 coming out. Expected to pay us more  
 money & Childs and to break entirely with  
 him from today.

## 536 Edison Lamp Co.

Total Assets \$63011.41. Last Asset June 27 1898

Item	Assets	Liabilities	Net Am.	Rev. Paid
1112	125,472.23	66,822.52	76,649.71	
1113	170,891.83	65,618.25	102,273.58	
1114	212,343.43	71,692.45	140,650.98	
1115	257,850.72	64,506.07	157,374.65	\$16,250. -
1116	345,085.41	80,445.98	264,639.43	20,000. -
1117	453,373.76	142,427.47	340,946.29	33,730. -

Item	Gold.	Bringing	Acc.	Costing	Acc.
1111	34,397	\$131.75	38		
1112	202,669	\$91,250	45	\$107,870	538
1113	333,247	\$139,758	42	\$123,762	37
1114	370,073	161,063	44	\$129,997	35
1115	432,291	183,070	42	\$107,409	25
1116	623,445	255,809	41	\$155,644	25
1117	826,871	343,263	41	\$207,636	31
	2,522,213	1,191,168		\$722,300	



536. New Carbon Factory Jan 26<sup>th</sup> 1888  
 took over a carbonizing furnace to the  
 factory, minutes & favored it to David  
 Hickman as superintendent. Factory is  
 situated between Blomfield & Orange in  
 200 ft x 200 ft brick & divided into different  
 rooms

537. Induction of Magnets Feb. 2 1888  
 I broke the field in a #1 machine 20 times  
 and a #18 20 times without perceiving  
 any bad effect. I found that I could  
 take away all spark when breaking  
 the #1 by pulling 4 sheets of an ade-  
 mary condenser around it - With  
 60 sheets condenser round the break of  
 a #10 this was no spark when broken  
 quickly - With 120 sheets round it you  
 could break as slowly as you liked &  
 still no spark. After 21 times breaking  
 round it with 120 sheets the condenser  
 proved. Insulation sought to be broken.

538. Micrograph Feb. 11 1888  
 Got Rev. Dr. M. W. Brown, G. D. Smith & M. W. Har-  
 ven to Laboratory to day - I had Ham-  
 len read something in it which he  
 went up stairs. They all caught it quite  
 easily never missing a word.

539. Edison's Business Feb. 1<sup>st</sup> 1888  
 FEBRUARY 12, 1888.

### GOOD-BYE, GRAPHO- PHONE!

EDISON SAYS THERE WILL  
 BE NO CONSOLIDATION.

The Phonograph has the Right  
 of Way.

What is the matter with Graphophone  
 stock?

Last summer it was sold at 35—per 100.  
 Now it is selling for 5, and people seem  
 to be glad to get rid of it at any price.  
 There are 60,000 shares in the American  
 Company, and most of them are held in  
 Washington.

There are said to be between 300 and  
 400 stockholders in all. When the stock  
 was quoted at 35 the total figured up at  
 \$21,000,000. Figured at 5 the amount is  
 \$3,000,000. These stock holders are  
 therefore \$16,000,000 poorer in  
 their feelings than they were at one  
 time last year. Of course this is  
 not a real loss, except to those who were  
 so foolish as to buy at 35 and 35. But  
 there are a good many people who put  
 \$5,000 or \$10,000 into the stock, or those  
 figures who are in danger of losing  
 all. There is no doubt that the Grapho-  
 phone business has been very badly  
 managed. It was all wrong to begin to  
 sell stock before the machines were  
 ready for sale and use. It was all wrong  
 to sell stock in the enterprise until some  
 arrangement was made with Mr.  
 Edison, who owned the phonograph  
 patents. TITZ CARPENT, has been  
 looking into the graphophone and phono-  
 graph business and has some news to  
 give its readers on the subject. "The  
 new Edison phonograph," said a gentle-  
 man connected with the company, "is  
 now completed and we are about ready  
 for business."

"There is considerable talk on the  
 street here about a consolidation of the  
 Graphophone and Phonograph Com-  
 panies," said a CARPENT, man. "I have  
 seen TITZ in jail."

Give glowing account  
 of Soundstand and all  
 overruns and they are  
 for traffic.

"I am glad you have mentioned  
 that," said the company's representa-  
 tive. "I have found several holders  
 of graphophone stock claiming that  
 consolidations were pending with  
 telegraph and the stock has been  
 kept up on this statement. Now let me  
 say one for all there will be no con-  
 solidation of its interests and just as  
 soon as the graphophone comes out  
 into the market, I'll ever do, Edison will  
 enter into immediately. Personally, how-  
 ever, I feel very little interest in the  
 legal fight, for I have seen the two un-  
 equalled, and the phonograph so far  
 exceeds the graphophone which infringes it  
 that the public will decide in favor of  
 the former at a glance."

I am sorry to see that so many peo-  
 ple have been taken with graphophone  
 stock, and where else could I afford it  
 bought this stock at 35 and have here  
 awaiting a consolidation in order that  
 the stock may rise. It is now about 5.

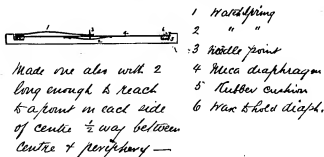
In order to understand the present  
 truth about my statements concerning  
 consolidation, I understand that TITZ  
 CARPENT, Mr. Edison to myself  
 upon the subject of consolidation of  
 telegraph, Edison of consolidation phono-  
 graph and graphophone. Here is his answer:  
 "The CARPENT, man is a fool. 'Rumors  
 of consolidation' which is a no consolation."  
 false. "Edison."

"I intend," said the gentleman, "to  
 see that those rumors concerning con-  
 solidation are completely untrue. I under-  
 stand the company is representative of  
 the saint. Several Graphophone Com-  
 panies have been made. I have re-  
 ceived letters from New York in or-  
 der to effect a consolidation. They have never  
 been completed. In fact, Mr. Edison has  
 talked very plainly in front of me, and I  
 have seen him flying all over the  
 city to the effect that the new Edison  
 is about completed. It looks like very  
 pedantic business. The fact of the  
 matter is that Mr. Edison is endeavoring  
 to make a consolidation of the  
 I am demonstrating the value of the  
 statements and give the public the  
 benefit of it."



541 Compressing Snow Feb. 20<sup>th</sup> 1888.  
Tried an experiment to compress snow - Found  
that not very wet snow 10 atmospheres  
would only compress it to  $\frac{1}{2}$  its volume &  
25 atmospheres would compress it no more.

542 Toy phonograph 1 Feb 23<sup>rd</sup> 1888  
Mica diaphragm with springs on 21  
gave loud talking without the objection-  
able extra metallic sounds.



543 Weight. Feb. 26 1888  
 $169 - 6\frac{3}{4} = 156\frac{1}{4}^{\text{lb}}$  Nailed.

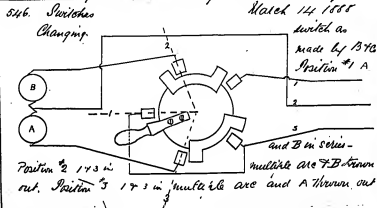
544 Polarization of Aluminium Mch 5 1888  
Made vapor a volt meter of platinum &  
Aluminium in acidulated water only let  
the current through one way, that is when  
the H is turned at the A plate - then  
the O is turned at the Pt plate the current  
ceases altogether. The surface of the Al then

not appear to be altered, being protected by  
a thin film of aluminium on removal of  
which the metal returns.

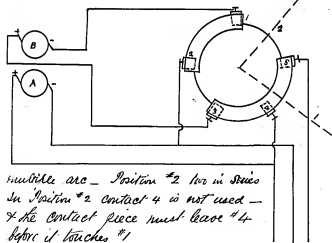
It seems now that this may not be an oxide  
but that the oxygen has such an attraction  
for its surface that it covers it to a greater  
depth than any other metal and conse-  
quently insulates it from the contact with  
the liquid.

Continual reversing of the plate would  
probably disturb it & allow the current  
to pass. A current open would disturb  
the gas but not the oxide if it was formed.

545. Toy phonograph. 2. Mch. 6 1888  
Made a small phonograph for clothes, etc.,  
with an automatic return motion so that  
you simply turn always in one direction and  
it says the same thing over and over again.



Switch prepared by Braun for throwing two dyn.  
in series or multiple arc - Position of two in



multiple arc - Position #2 for in series  
in Position #2 contact 4 is not used -  
the contact piece must be cut #4  
before it touches #1

Exp. Toy Monograph. Mel 31<sup>st</sup> 1885.



Instrument.

Cylinder 2 1/2" high depth 10 1/2"  
short point - rigid brass point  
holder 5/8" thick & 1/2" wide at point & 3/8" where  
screw goes through - Graphagon Automatic  
only return & turning always in same  
direction repeats always same thing -  
needle is shellaced & thinned at top  
Cylinder covered with polished copper foil  
1/2" thickness thick - very good talking  
but in repeating the work too close  
by the needle is great & at short

distance the talking is a whisper the first -  
The 2 1/2" depth is too large as the travel  
I make added 1/2" width makes the appar-  
ate too wide to go in the coil - 1 1/2" is as  
much as we can allow -

#3. Then made third -

Depth 1 1/2" depth - Needle 102" - Depth 102  
needle holder spring brass 5/8" & 1/2" thick  
1/2" - very low - equally as good as

#5. Depth 1 1/2" of celluloid ivory 100"

Bran am 1015 - Good but rattle -

#6. Depth 1 1/2" of Cell. ivory 1011" thick -  
Bran 1041 thick - Good talking - no  
rattle but low.

#7. Depth 1011" Cell. ivory - Bran 1034 thick -  
Good talking - low but no rattle -

This was about same as 6 - Depth was  
planned a little more which accounted for  
it over balanced the effect of thinner spring

#8. Depth 1 1/2" of Cell. ivory 1011" - Bran 1020  
talking plain showing brass too thin

#9. Depth 1 1/2" of Cell. ivory 1011" - Bran 1030  
talking clear

#10. Depth 1 1/2" of mica 1003" - Bran 1030 -  
Good talking - but in the case needle  
a little sharp so that it is louder  
scratch -

#11. Depth 1 1/2" mostly same as #10 but

under the copper foil, we put a sheet of tracing cloth. This was so stiff however that we could get practically no talking at all, so it did not let the needle indent the copper sufficiently. We got the talking but very low or I should have brought it even out of adjacent wires.

\*12. Same as \*10 but needle pointed a little. Track shallow - Talking loud & not as much socal as some have given - Record looks sharp & clear.


Note - If you want loud clear talking you must have a very rigid lever to hold you point & then the groove must be shallow. When you reproduce with the same point that you transcribe with you will always get the socal - The thing to do is to get the record on the foil with means in \*10 & find some other way of taking it off by means that will not socal & will reinforce the talking.

\*13. Up to this time we had been using 26 beads on the cylinder sharp at the top, but now we had them dulled until they were divided about 60 ft & no steel - Gauge 18" mica 001 - Brass 000 - groove light - We ran the half over to become insures that it was excellent talking except the socal and -

\*14. Made a diaphragm for 13. Hard rubber top - fine brass wire needle fast to diaph. by elastic -

very good talking - no socal - very low -  
\*15. Reverser for 13 - mica diaph 001 - Brass wire needle no socal, good talking - but too low  
\*16. Reverser for 13. mica diaph 001 - Brass wire needle rigidly fastened to diaph by a piece of wood shelled binder talking - and much socal -

\*17. Reverser for 13. Mica diaph 001 - Brass wire needle fastened to paper top 9 x 12" long one by fine insulated wire - no diaph. between the needle and the diaph at top of cone - very fine talking - no socal - but low -  
talking quite natural -

\*18.  I now took a 2 1/2" depth of 001 and used a .050 brass spring + point flattened sideways. I talked on to a sheet of copper - So receive the I made a receive of cardboard about 3 1/2" x 4" long, put a piece of straw-board on top for a diaphragm - Good talking - no socal - a little low - talking quite natural - if we can reinforce this sufficiently it would be perfect.

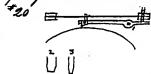
\*19. Substituting the same brass point holder for that did the talking for the diaphragm was point brought in all the socal & even increased it as the cardboard acted as a resonator.

We called a night of work of Nov 30 & 31.

April 6, 1919.

During the week I have worked all night

three nights on the toy phonograph and have got good results.



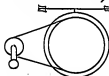
front view as 2.



The receiving needle bent down as in dotted line & held there by a loop of belt shellac'd to the diaph. Receiving diaph. has a sketching device & is made of bolting cloth shellac'd. Rec. needle ground as 3 chisel shaped & not more than 60% of width of talking needle. With this on copper foil the talking very loud and clear with a rec. diaph. of only 1 1/2" diam.

\*21 Cylinder made of a mixture of Caphast & Cinnabar wax which is quite hard we got loud talking & clear with no scratch. The wax in the case should be ground so as to cut out and not tear as of the surface of the wax so that the scratching becomes very bad.

\*22 Made a toy of one single wheel around which is cut one groove & the words are all put on one turn of the cylinder

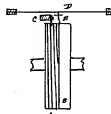


\*23.

April 14 1888.  
Made small cylinders of lead, pewter, & silver (has lead & silver in). All worked but this is the best giving very little scratch. On the regular phonograph they worked very fine.

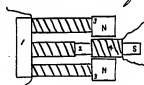
\*24. I find that I require 2 hours about a certain speed before you can get good work on the toy. The regular standard phono. works at about 530 inches per minute. Our best talking toy at about 900 when talking on the copper foil - by shown at 22. when run so as to be able to talk in it and the cylinder left small enough to go inside a doll is only about 250 per min. This is not much good talking & what is put on comes too quick. If you talk him continuously it repeats too quick then should be a hours.

\*25. It has made me now that has 600 per min & 4 turn instead of automatically knowing the diaph. back - it is done by pressing a button in front of the diaph. It is then shown in



which is cast on half its turn a ring of tin B. A is cut like a screw - B & C is fastened to the ring that holds the diaphragm & on it is held the knife that engages in the screw & pushes the diaphragm along - E is the talking needle & travels in the record made on the tin B. Very good & practical.

543. Electric Rock Drive - Apr 14, 1888.  
Have made for Mr. E. some experiments that  
he gave me in February in regard to a new  
electrical device for rock drilling - handed



in "Eng. & Arch." 197. -

1 is a magnet having two

N pole S.S. + on each 2.

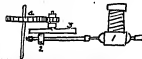
the S pole extends out

some distance beyond the

two N pole - A solenoid is placed on this  
extended pole and a reverse current sent  
through it alternating about 500 times a min.  
this makes the spool revolve rapidly  
with great force - By this means you can  
get a very long pull for a magnet - the  
model I made pulls about 4 inches & moves  
in through slightly until the solenoid is  
in such a position that the lines of force  
are about normal again -

544. Electric Railway - April 16 1888.  
Mechanical device -

Have made a mechanical device for  
Electric Railroads that is a decided ad-  
vance on anything previously done.



1 is a motor of any  
make driving a small  
friction wheel 2 which  
can be moved along the

shaft at will - This drives the friction disc  
which in turn drives shaft 4 by wheel  
and pinion - Shaft 4 drives the wheel of  
the car it is attached to -

Motor 1 is always running in the same di-  
rection - Speed is varied by moving the  
friction friction from the periphery to the  
center and the car can be made to run  
backward or forward by setting the  
small wheel on either side of the center of  
disc -

550 Toy photograph. April 16 " 1888

Have decided to make a photograph  
like the regular show. but provided with  
a cylinder to take a number of ten rings  
on - Thus we can take at least 15 times  
& take them off & throw them on the  
trip - If we can have the board set  
on a cylinder a large number of times  
& then cut the cylinder up into small  
pieces & throw each piece in a tray

551. Armature Experiment

April 30<sup>th</sup>

Some time ago I made an experi-  
ment to see what effect there  
would be on an armature  
putting its own lines of force. They were

High. - Assuming this experiment I find that when the armature is driven (with its field magnet on) to current passed through it whilst it is running

a current of 50 amperes is reduced to 35  
 " " " 28 " " " 22  
 " " " 16 " " " 14



Magnet around in the position but no wire attached

49 amperes reduced to 22  
 28 " " " 19  
 15 " " " 10



Magnet now brought closer but no wire on

60 amperes reduced to 21  
 45 " " " 20  
 33 " " " 16  
 24 " " " 14  
 15 " " " 10

I found by taking drops every three blocks in each side of brush whilst running that the lines cut by wire generated a current on one side of brush in same direction as C on wire. For the other side one on the opposite direction. Reversed brushes only and kept the armature still & found that I got about the same contrary result.

### 532 Magnetization

May 1<sup>st</sup> 1899

Comparison of different materials



Shape cylindrical

6" long 1 1/4" diam.

N of line of force Norway Iron 100.


Amperes turn

Material	5000	10000	15000	Remarks
Iron (howay)	100	100	100	
Iron (Alston)	96.7	95.2	99	
Iron Cast.	92.9	83.3	98.9	
C. Iron 40	91.9	85.5	89.	1% short weight owing to flow holes
Ir. " 30				
C.I. 95				
First Man. 5	86.6	75.4	69.9	A little hard
C.I. 90	82.3	74.7	65.8	Is hard can only just turn up
First Man. 10				
C.I. Runnings held by paraffin	40.5	31.6	29.2	



533. Alloys May 1888.  
 Type metal 75 lead + 25 Antimony  
 Hard, granular, fine fracture —  
 1 With knife cut clean + hard —  
 Turns brown, cany. — not solid  
 65 lead 35 Antimony  
 Fracture — coarse granular —  
 2 Cut more like Cast Iron — can  
 scarcely make a shaving —  
 Not solid + looks a little  
 granular as if it had not  
 mixed perfectly  
 80 In 20 Antimony  
 3 This is considerably harder than  
 the — Cut easy — not good polish

534. Insulation for House Wires May 18 1888  
 1. Fireproof + good insulation  
 Boiled linseed oil chlorinized into a  
 thick mass — Put this into a mixer  
 + add little by little, Anti Chloride  
 Antimony until it becomes a thick  
 mass like rubber — Had out in same  
 mixer with warm water until no trace  
 of acid — Work it in threading  
 machine until it becomes more pliable  
 — Put this on wire by a pressure  
 sprayer — Insulation very high +  
 absolutely inflammable —

535. Insulation for House Wires July 15<sup>th</sup> 1888  
 2. Same as 533 can be made (we have  
 made some lots) by putting the boiled  
 linseed oil, together with exact amount  
 of finely powdered Manganese + passing  
 the oil through whilst it is in the mix-  
 ture — Samples made in the way last  
 equally well with 55% "1."  
 3. 2 mixed with 5% Asphalt + 5% oxide  
 Zinc makes excellent insulation which  
 gets hard after putting on wire but not  
 firm enough for use  
 Note — We have tried many mixtures but as yet  
 have not arrived at what we want for  
 hardness just after putting on a wire, as  
 that it can be put on + covered at the  
 same operation  
 Note Made a new masticator + a bar steel roller  
 with bearing projections running  
 cylinder, A runs faster than B  
 cylinder runs slow + catches  
 mass + carries it to the top  
 + shipped off + falls into the roller  

 4. We have just made a compound where  
 the oil is put into the mixer and the oil  
 is passed through until it gains a thick  
 consistency then take out + masticate  
 this we must test yet  
 Note. That we want at present is some mixture  
 of some thing with the above that will enable

it to come out of the 'Squirts' hard enough to go right into the other one over.

*Note* The upright pipes is not good where a gas has got to be burned as the material is at the bottom & goes at top. I suppose a horizontal one that will keep the material in a thin layer & spread 'up' the whole length of the barrel, etc. A long cylinder made to open lengthwise in which a frame work of iron restors one way while a shaft carrying another set restors in the other direction, outside cylinder can be steam heater & have air places to let gas in.



556.

### Fire Circulation

- \*4 Regular #2 macerated with 30% of Coal Linn - A little for stuff 20 added a little Lycopodium & makes it work easy - Covered 140" to 171" - heated infinitely after 44 days in salt water. It's a little soft when I goes on & goes harder after a few days.
- \*8 Reg #1 macerated with 16% Dr. Al. This could not be put in wire
- \*6 Chlorinated Oil 104 spec. 1600 gr. Coal tar 400 gr. Pent. Chlor. Carb. 1400 gr.

*Note* Rubber in Regole - too good in Squirts - It seem to swell out larger than die -

- \*7 Reg #1 with 5% Men Asphalt + 2% Linc Oil heated by steam in a squirt - good but a little crumbly.

- \*8 Raw Linseed Oil 1223 Grammes Linc Oil. to weight mixed & precip. poured away - consistency of thick molasses - Boiled all water out - then cool fast

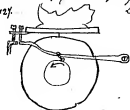
Coal tar 344 Grammes + Lin in mixer - added whilst there 1150 cc. Pent. Chlor. Carb. 11 hours come out thick - crashed in hot water till in acid

This goes in excellent & only wants to be a little harder - It's good enough to try a large lot - It's an excellent insulator & cannot be burned.

*Note* From 1 May the experiment were tried between July 15<sup>th</sup> & the date -

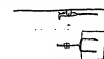
557. Iron wire Armature Sept 7 1888  
Am making armatures for the new  
Multipolar dynamo & transformer of  
fine iron wire (welded) & wound up  
tightly - then put on a former &  
with mallet & pressure pressed into  
shape

558. Toy phonograph Sept 7 1888  
Device for lifting the needle  
for spring machine when  
winding up the machine -  
Winding up is in direction of  
arrow & this lifts the lever  
and therefore the diaphragm



We wind the spring up with a 15 lbm  
Guerra stop -

559. Phonograph. Sept 10<sup>th</sup> 1888  
New needle to cast on uneven surfaces  
made by Edison consists of a needle  
pointed & carrying a vane at  
the other end - The vane  
is not affected by the vibra-  
tion of the cylinder (it offer-



ing too much air resistance) and acts as  
a movable fulcrum allowing the needle to  
follow all the irregularities of the surface  
of the wax & at the same time transmit  
the vibration to the diaphragm

I shall make use of this for the toy doll.  
Make the point a little longer from the  
joint & make it grove as well as go up & down -  
As I can cut a '008 groove I can  
get about 13 lines in 1/16" or thereabouts.  
I am sure the needle will play that far



Box -

560. *Multivibrator Dynamo*Dec 5<sup>th</sup> 1899.

Tested

16 Field coils in 5 series of 3 and one in extra circuit making 6 circuits in parallel -  
Test from 7 a.m. to Dec 5<sup>th</sup> & 7 a.m. Dec 6<sup>th</sup> and was interrupted twice by field brushes & plates temp. on surface.

Plot of terminal started at 130 & ended 115  
Circuit began at 68 amp. or 10.3 dead spot  
ended at 47 or 48 dead spot  
Load 510 & 740 amp.

Time of running 3 hours.

Highest temp. arm. 260 F.

Only feature calling for improvement was the sparking at brushes - Not too increase with load & probably will be overcome by balancing the mag. power of the field coils - No air now doing this

561. *Collaps.*Feb 21<sup>st</sup> 1899

4 For use of hydro acid or alkaline solutions during experiments

Copper 15 pairs

Zinc 2.34 "

Lead 1.82 "

Antim. 1 "

562. *Photograph*

March 4, 1899

Filed a small spiral spring put under the head of the ship  
adj. screw so - without this it works loose.



Feb 19 1899  
New models of Rec. Plug sent to me today



The needle 220" wire capped in  
7 shank 225"



140" 225" ball joint  
225" shank; this part is

of movable weight limited  
in its movement & working draft. against its inertia -

563. *Dynamo (Edison)*

Apr 20 1899

"60 140 V 1075 amp. 4450 Rec.

Arm. core 2.34" & bore 2.54" diam.  
End plates 2" wide at top, larger near shaft  
84 divisions for 2625" fibre - Grooves 8" each  
section. 4 plates & the arm.

Windings 17 #2 100's & 100's up in a strand  
of two complete twists in 2" compressed  
into shape - 1 of these strands once around  
and 14 blocks. Arrangement is wound with a  
dummy first & the regular arm shaped  
up on it. It could also be wound with  
12 "100" wires - Both above are diametric  
winding



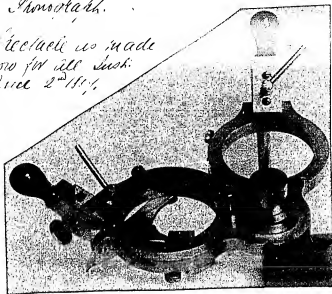


56<sup>th</sup>. Anamorphs for Photograph.

The first 1000 made were of very pure iron in sheets  $4\frac{1}{2}$ " thick and 13 of these put together. This was cut by a ring punch) out of a sheet of iron about  $\frac{1}{16}$ " of all the iron used. The speed of cutting the lines of force is so small (only 6 feet per second) that I felt sure the Foucault currents were practically nil. Had we made of cast ~~iron~~ and it worked about the same not more than 5% difference. This makes quite a saving on the cost. June 14 1877.

56<sup>th</sup>. Anamorphs.

Facilities made  
used for all work.  
June 2<sup>nd</sup> 1877.

56<sup>th</sup>. Incandescent Lamps. July 13 1877

Plowing shown before the Physical Soc. of London) the "Edison effect" Galv. between + & middle plate shown current, between - & middle no current - when negative leg shielded by glass or metal shield no current bet + & middle. The cap it is evidently due to connection of carbon particles in residual gas.

570 The Edison Gen. Elect. Co. July 13 1877  
Rec<sup>d</sup> from him in exchange for my stock -  
Cash £88.435  
Reg. Stock £181.900  
Def. " £103.400  
£371.035

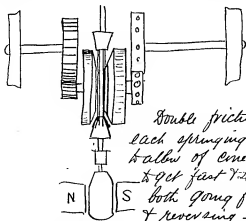
571 Resistance of the human body. About 250 men & boys were tested for resistance at Lab. & Phys. Work. With the hands placed in a 14" potential solution they averaged about 1000 ohms varying from 1100 to 660. With the hand shaking, & grasping the wires according to the amount of pressure the body would vary from 10000 to 200000.



P. Field

C.D.E.F. Armature designed for varying volt.  
 110v '012" 50 Platelets. 1'82 w perfect  
 length about 65 feet.  
 for 100 110 115 7-120 1017.

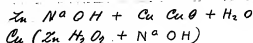
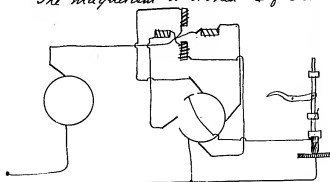
576. Street Car motor Aug 21 1889



Armature always revolving in one direction -

579 Aluminium - Sept 5<sup>th</sup>

ALUMINUM MAKING IN PITTSBURGH.  
 PITTSBURGH, Sept. 5 (Special).—The world's news is "The American Manufacturer." Joseph St. Weeks, Editor, will say "The Pittsburgh Reduction Company has been for some time making aluminum under the patents of Charles M. Hall, of Oberlin, Ohio. The process is one whereby the metal is reduced directly from the oxide by electrolysis." The oxide is dissolved in a bath of fused metallic fluoride and is then decomposed into aluminum and oxygen by means of an electric current. The bath remains unchanged, more being added as the process of reduction goes on. This makes the process a continuous one, as well as a cheap one. The electrolytic reduction is done in a large tank, the electrolyte being a mixture of fused sodium fluoride and aluminum fluoride, and the oxide of aluminum being dissolved in it. The tank is kept at a temperature of 1000 degrees Fahrenheit, and the current is supplied by a dynamo. The process is said to be the most economical and the most perfect yet devised for the production of aluminum.

580 Lalande Edison Battery. Sept 5<sup>th</sup>581 One milking magnet Sept 5<sup>th</sup> 1889  
 The magnetism is broken 2/3 of rev.

This produces such a spark that it burns up the commutator - A test in the magnet broken shows that at point of break there is about 2 ft. & got rid of 20 endemics as out of the question - No then you isolate the brush in the commutator & break in outside carbon points as shown.



## Edison Monograph

1899. Olden	Monograph	Head	Blipped	Byes	Baked	2.00	N <sup>o</sup> R <sup>o</sup>
Aug 3	5		67	2993	58		406
10	31		35	3086	25		443
17	68	246	49	3180	00		443
24	84	233	53	3164	61		480
31	29	229	77	4253	80	14134 34	471
	217	708	281	16388	04	14134 34	
4	18	196	27	2029	73		478
11	42	273	67	4201	61		448
21	92	288	54	2572	73	12963 49	480
28	56	237	118	7617	85	10564 50	473
Oct 5	51	130	56	81783	52		487
12	12	100	81	908	90		436
19	19	17	17	1667	73		429
26	26	41	46	1461	94	19963 43	342
Nov 2	15	8	95	81458	17		348
9	0	0	0	247	94		318
16	311	0	0	573	47		320
23	20	6	17	378	10		352
30	19	73	56	41921	46	23614 06	368
Dec 7	37	158	176	4162	99		354
14	634	213	216	3136	36		420
21	190	241	226	2402	81		493
28	130	141	142	1817	11	27288 08	508

N<sup>o</sup> 10. Statement

Per/100	Cylinders Molded	Lat.
4709 01		
4821 14	5743	
4880 24	5460	
5137 85	6980	
5297 42	8005	9226
24845 66	26190	9226
4403 17	7020	1050
5371 18	8960	1066
5406 04	8360	1300
5402 47	8280	3644
14415 24	5080	2700
4729 53	7787	2085
4317 37	—	2770
4052 97	—	1974
4167 10	1260	3094
3829 87	7350	1074
3627 23	9580	3050
4112 42	10610	600
3160 95	10000	2444
4612 82	12010	6010
5083 86	13520	3012
5844 83	17	1347
4085 95	8800	974
		1248

Blumens. Nat.

\* Island. Edin. Battery Apr 12/1899.

Cost today on an output of 40 complete  
photographic batteries per day.

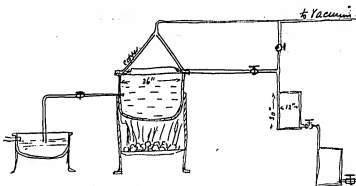
	Cost	Mat.	Total
Bar. box	20	592	
Lead.	13	624	
4 Glass.		56	
4 Cords		14	
All accessories	06	433	3.06
Ride. Plate	248	1.062	1.310
Amc.	144	1.878	2.022
Soda		44	.44
Gas. Cpt. of 40.50 a day			.41
Dep. in 1000' at 5%			.80
		Total	1.06
Royalty on 12 lba			1.20
25% Prof. in \$1.05			2.01
			11.26

At \$15.50 but we can afford to give  
25% to the special Co. & S.

Apr 12 1899.

Recovering Stearine from Photographic Wax.

Decomposition of old wax by an acid  
purifying and separating the part by  
distillation in vacuum.



Steam distillation would answer but then -  
Gives trouble - Vacuum about 14 in/  
We can recover about 90% of Stearine Acid  
+ Stearine

585 Thomas O. Edison

THE VISITOR TO MEET THE IRON CHANGELING.  
JAMES, Sept. 15. - Thomas A. Edison has gone to  
Hoboken. He will return to this city to exhibit  
the photograph to James. William, James has  
black and white Van Nostrand.

876 Edison Transformer #10 Sept 12, 1899

1080 V - 18 a. h. 110 V - 15 a.

General dimensions same as a #16 transformer

Arm. core P.S. 7 x 8.128 at level - 92 lbs. for 2000 lbs.

Winding - 1 #16 AWG. 9 turns round 4-46 blocks

+ 9 #16 " " " " " "

mid 9 #16 just for  $\frac{1}{2}$  the low volt. turn

1 #16 " " " " " " " high " " " " " "

Finish for same transformer

Res. = 0.0155 w. and 1.23 w.

Weight 24 x 26 lbs. less. No paper in coil

4 paper in body + 2 paper 72 lbs. between layers.

Magnet. Reg. 16 A. mach. Est. Res 450 w. in 1000 to 1050 volts. Magnet. 1000 w.

Test on above Mch. 11.

V Min., Amp. P., V Sec., Amp. S., Res.

1050 115 1650

1020 62 111 40 "

1060 21 110 160 "

1045 11 110 79 " No sparking -

Heat in Armature same as a #10 mach.

Weight 3600 lbs.

887 Transformer Sept 1899

With paper on same in comparison with

3 x 3 coils 3 wire at Niagara Falls meter

7 Edison. Am. Ill. Co.

He finds the double 3 wire for the three phase

the 3 wire 4 Transformer are equal at

4 miles, beyond that the 3 wire has the

advantage, heavier, the 3 wire.

The 3 wire is not supposed to be commercial

at the however at 24, per cent. the means would

be \$22.00

\$3.447 cost of transformer

\$11.523

\$990 cost of energy del.

12.033 net expense of producing

7 trans. making the energy.

See diagram #4 in diagram book.

888 Monograph Battery test Sept 21, 1899

To compare the relative behavior of best

7 or eight non armature in 1000 a East Am

armature motor with a 4 cell Leland &

Battery that had already run one turn

It was kept taking off a chip the entire

period - It failed 5 times after 50 hours -

The battery was cleaned and replaced -

It was then set to work on a motor with

a wrought iron arm. under similar condi-

tions - It failed after 47 hours - Another

test was made between these two machines

with two Bichrom. cells, regular phos. chromic acid type - 2 cells in series were used - The wrought iron armature ran 4 hr 50 min - the Cast iron one 1 hr 30 min -

A third test was made with 2 phos. one with Cast iron & the other with wrought iron armatures - 2 phos. 4 cell Salind. C. Bat. were made up one for each and not in driven light, they started 11-21 volts 16 Sept and stopped at 21 volts 17<sup>th</sup> in case of the Cast iron and 6 volts on the 21<sup>st</sup> in the case of wrought iron runs of 76 + 103 hours respectively -

Batteries were then recharged, Jones Amalgamated & the armatures exchanged - the Cast iron stopped after 2 1/2 hr resistance being 0.48 w - the wrought iron one stopped after a continuous run of 85 hours -

A motor with wrought iron armature was set running by a battery whose plates had been cut down to half width - It ran continuously for 60 hours when the int. res. became very high -



The speed of the armature is only 6 per cent (cutting speed) so that I don't think you could observe any difference with the difference, although the Cast iron armature is said to be wrought iron one is made up of thin plate 1/8 in number to the inch.

I think the reason that the wrought iron one runs longer in the same battery is because of its greater permeability.

389. Shroveton.

Sept. 14 1889



## 592 Big Bend Tunnel &amp; Mining Co.

## CALIFORNIA MINING COMPANY, PALM SPRING

THE MINING CO. OF PALM SPRING, CALIF., HAS BEEN ORGANIZED BY THE CALIFORNIA MINING COMPANY, PALM SPRING, CALIF.

It is reported that the Big Bend Tunnel Mining Company, which is the principal owner of the mine, has given to Jones, with a view to the stockholders of the company, the sum of \$100,000.

The mine is situated in Big Bend, Santa County, California, the capital stock being \$1,000,000. The day of the mine, of this city, is president of the company, and there are several other stockholders in the mine. The mine is situated in the Big Bend Tunnel Mining Co. of Palm Spring, California.

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## 591 Thomas A. Edison

## THOMAS A. EDISON RECORDED

Paris, Sept. 27.—The Grand Cross of a Decoration of the Legion of Honor has been bestowed upon Thomas A. Edison, M. Spuller, Minister of Foreign Affairs, in consideration of the services rendered by him to science, and for the part taken by him in the Paris Exposition.

M. Spuller and M. de Cassat were splendidly represented at the ceremony, and the president of the Exposition, M. de Cassat, was also present.

The ceremony was held in the Grand Salon of the Exposition, and the president of the Exposition, M. de Cassat, was also present.

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## 592 Photographic Tunnel Sept. 29, 1889

Best Angle &amp; Direction



## 593 Battery "A" Calumet &amp; Hecla - Oct. 3, 1889

	Barrel	Barrel	Barrel	Barrel
	Barrel	Barrel	Barrel	Barrel
Time Oct.	2.46	1.062	1.00	2.44
30.5 ft	1.01	1.266	1.18	2.18
10.7 ft	2.120	1.05	.80	
Royalty	1.00			
	6.50	2.334	1.98	.72

He also has the right at 75.30 ft. and  
 the Calumet & Hecla mine below  
 25% off 20.1

Battery "A"	Barrel	Barrel	Barrel	Barrel
Barrel	2.40	"	3.28	"
Barrel	1.56	"	2.08	"
Barrel	.71	"	.76	"
Barrel	11.68	12.87	11.03	

574 Edwin Lalumet Battery Oct. 13 1889

Specs given to Mr. Small:-

Battery 4 Cells Comp. in case,  
without Oxide, Plate, Limes or  
Loda.

8 Oxide Plate 40¢ each

8 Limes Carb. 2 1/2¢ "

8 Loda Plats. 12¢ "

8 1/4

3.25

2.25

46

15.60

Bekingham Jan. 26¢

" Mr. Over 15¢

10 Lippincott 25% off

10 Procter & Co. for China 15% off.

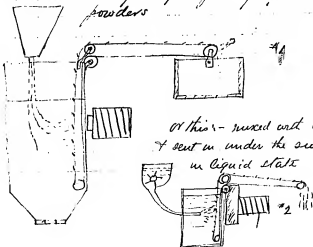
Oct 13 1889

575 John Carter Case.

Specimen of Justice Bradley Niagara  
of Oils in the case given at  
Netherlands Oct. 5<sup>th</sup> 1889

576 Ore milling device (Jen) Oct. 13 1889

Water principle for impalpable  
powders



or this - mixed with water  
& sent in under the surface  
in liquid state

When a double magnet is used in a loose cylinder, and the  
cylinder turned in the direction  
that would take the ore up  
if it were not for the magnet  
a peculiar twisting motion is given  
to the ore which cleans it much better than an ordinary  
single magnet. For Bradley's very fine technique  
take over the process if it can be made continuous will  
be very good. We find that after putting a load of  
ore at X the outside cylinder should run about 200 feet  
to concentrate it to percent after which a water course  
is taken the concentrate over and it is changed again

284  
No. 1000

THE NEW TRACK IN JERSEY.

OWNED WITH LIMITED STOCKS

SEE LIST OF NAMES AND ADDRESSES OF STOCKHOLDERS

THE NEW TRACK IN JERSEY.

Part, Sect. 57, 58, 59, 60, of a Commission of the Legislature of Jersey, from its Hon. Father, the Governor, and of the Senate, was sent to him through the American Legation, and it contained a few sentences of which the present writer was glad to witness the presentation of it to the respective legislature of the American Legation. The interesting incidents have happened and circulated for me a story which has been all too brief in the beautiful capital of France, but so interesting has seemed me so dear to me at all times important, but in this instance it was the delightful information that gave the exceptional status. The occasion was that of a dinner-party assembled by the American Minister in honor of his colleagues in the International Conference upon Vegetables and Meats, Dr. Goud, of Harvard University, other especially honored guests were Mr. Charles A. Dick, of New-York, and Judge John Davis, of Washington; and the company included Mr. Chief Justice Hennessey, of Louisiana; Judge Alexander B. Hagan, General Burtard, Colonel Hitchcock, Mr. Jacobus C. Calhoun, Mr. David Dwyer, Chief Librarian of New-York; Professor Davidson, Mr. James G. Hill, Mr. Fisher H. Bishop and Mr. Tipton, Chief Secretary of the American Legation. Judge Hennessey came in after dinner, and still later came Mr. Hennessey, attended by his secretary, Mr. W. J. Hennessey. As Mrs. Field is travelling in Spain, with her father, there were, unfortunately, no ladies present.

The incident of the presentation to Mr. Hennessey, which it had not been planned, proved equally a fortunate accident and a delightful surprise. All who have the good fortune to know Mr. Hennessey are aware of the gracious modesty of his disposition and the gentleness and simplicity of his manners. These two qualities of gentle modesty and gentle modesty have endeared themselves more exceptionally than they did in the moment when the great inventor, taken completely by surprise, suddenly found himself addressed by the American Minister and invited to accept this cross of the Legion of Honor from the President of the Republic of France. Every man in the company certainly felt moved by a deep enthusiasm, and when Mr. Field delivered to Mr. Hennessey the official diploma and letter and having the ribbon about his neck, the feeling must expression in some of the most fervent applause that ever was witnessed. Mr. Hennessey was deeply touched. He blushed like a girl, and, after looking at us for a moment in pleased confusion, he said, very simply: "I never in the world saw more like a man, of such fine and such beautiful graces, and so disinterested; but he deserves them all."

It is not needed for any one to tell you readers how brilliant Paris is at this time, even though this is not the fashionable time of year; neither do they need a descendant on the marvels and splendours of the Exposition—namely the most prodigious and wonderful display that ever has been made of the industrial art and products of civilization. We will dwell, in this brief communication, in to record for you, which is a great merit and from, an incident that must probably strike every American who truly loves his country and his country of men in American character and nobility.

398. One building Oct. 19<sup>th</sup> 1889  
Hallway or from Michigan

34. Runway fell 36 feet long running on rollers, 15 magnets each = 100 about a foot apart

100 down against the water washing tried different quantities of water & strength of magnet; also tried putting on a lot of ore and letting water run down until perfectly clean at same time stirring up the different little lumps over magnets

This when dried showed in the last lot 19.87 gramme taken out by magnet  
670 " Not " " "  
= 14.15% x 12.44% = 54.4%

very poor.  
3. On the cylinder 12" diam with magnet about 14" wide as shown in Exp. 3. The following results were got:-  
halves on 12.25%

1 Run.	3 feet	46.33%	51 Run.	90 feet	70.54%
2	6	50.66	40	120	70.95
3	9	55.02	50	150	71.37
4	12	61.54	60	180	71.67
5	15	62.98	70	210	71.86
10	30	65.16	80	240	72.11
15	45	67.39	90	270	72.32
20	60	69.30			
25	75	70.22			

Refining is small and the use of magnet at present is limited

## 589 Railroad Brake

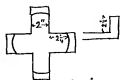


Oct 19 1889  
Enter his brake  
key - All broken  
put on in 15 seconds

The particular are as follows:-  
Ultimate iron 4" diam X 5 1/2" inside  
2" wide 7" round with 5 lugs 23 1/2" H.G.

58 feet in all 440 blocks

Magnet 1" thick 4 poles & wound with 170, 23 B.  
H.G. on each leg.



Norm 5 1/2" to incl & 2" diam

Norm wheel 200 teeth

Chain gear 3 to 1

Motor 1200 turns full load -

Driven by friction as:-

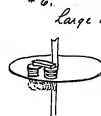


Test No.	Yr	Speeds				Load		Speeds		Remarks
		Ang	Rev	Min	Sec	Wt	Dist	Wt	Dist	
1	43	465	495	460	25 1/2	17	010	125	165	125
2	42	12	500	470	52	20 1/2	150	171	239	54
3	46	10-8	925	464	25 1/2	20 1/2	280	177	41	16
4	46	11	506	47	26 1/2	26 1/2	400	100	17	28
5	52	8	216	56	36	36				

Test reliable & 10% only

## 600. Ore handling - Machinery over Oct 22 1889

\* 6.



Large disc 36" diam - 4" magnet held above  
and ore put on underneath. Center  
of magnet at about 15" dia  
Plate turning 2 1/2 per min - 100 turns  
made Current 29.5%

\* 7

2 1/2 ore put on - Rev. 2 1/2 per min - 15" diam  
Concentrate 15 1/2 B.  
Tailings 15 B.

Put on Tailings again & got out 40 B Concent  
Concentrate 10%.

\* 8.

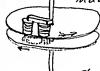
1/2 B. - 25 Rev per min - 50 turns  
Current weight 5 1/2 B. 70-75%

Tailings carry 1% iron

\* 9.

1 1/2 15 Rev per min 60 turns  
Current 10 B 71%  
Tailings 4 1/4 14% of iron

\* 10

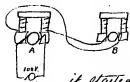


Made an underneath plate that revolved  
in opposite direction at such a distance  
that the picking up magnet would  
take up all the iron as it passed under  
This alone of running must faster as if  
he speed known off the iron it must fall on the  
bottom plate & pass under the magnet again  
The tailings are scraped off bottom plate at the  
opposite side from magnet.





603 Transformer. Starting. - Oct 31 1889  
 tested to find out whether a motor or transformer  
 would start up by current sent through armature  
 when it had no field on.



A no. 2 C dynamo B no. 1  
 driven by belt from armature A  
 B current of 60 amperes was  
 sent into armature A from C  
 it started and drove B which in 10 sec  
 charged A's field & kept it down to speed

A current of 15 amp sent through a hum 14 amp  
 armature starts it

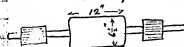
For transformer at a distance the field can  
 be charged from the secondary and it can be  
 started by having a few turns of the fine wire  
 in the core to act as a starter with a small  
 current

604 On killing Malloy ore  
 A test on #13 with 9 1/2 magnets gave 2 1/2 per  
 hum. of concentrate at 66.5% with quite some  
 in the tailings

Speed 7/4 Rev. Circum 19"  
 Length of tube 14' 6"

605 Transformer Oct 31 1889  
 So changed a #4 Edison dynamo to  
 a transformer for 1050 V 20 amp to 20 V.  
 and 500 amp.

Comm. 96 & 16 - 32 div-



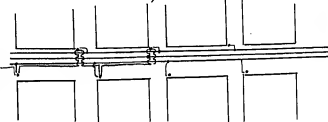
Fine wire 1 #14 B.T.S. (0.051) 9 turns around  
 4 9/16 blocks & 14 #11 B.T.S. 191" once  
 around 4 1/2 blocks. -

Fine wire 862 turns of 3/2 feet. Drop 69.3 V  
 at full load

Coarse wire 1100 drops on armature -

Arm edge #8 & hum #1 -

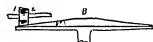
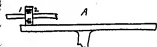
606 Arc light on Edison current Nov 5 1889  
 For city arc lighting it is advisable when  
 laying tube to put down a small diameter  
 cable & arc lamp hook at street corners



Many is that two or four can be put in series  
 across one line

607. Friction Roll. Nov. 5. 1889.

Which is best for car driving a straight roller on a flat disc or a conical roller on a short cone.



In any case that we should want it for use limited to about three sq. ft. diam for the driven and 24" diam for the plate -

Owing to the shaft of driver having to pass over the cone, and to left of cone, and also to get an easy working friction we find it apparent to use more than 8"

Supporting both drivers to be only 1" under them.

at periphery	1" - 17.37"	running on	75.39"	= 4.41 times	differs 2%
"	2" - 16.02"	"	69.11"	= 4.32 "	"
"	Center	1" - 17.37"	40.40"	= 2.31 "	"
"	"	2" - 16.02"	36.55"	= 2.16 "	"
					6 1/2 %
at periphery	1" - 17.37"	"	75.39"	= 4.41 "	9 1/2 %
"	2" - 17.37"	"	69.11"	= 4. "	
"	Center	1" - 17.37"	40.40"	= 2.31 "	13 1/2
"	"	2" - 17.37"	34.35"	= 2. "	

This shows that whilst neither is perfect the conical one has much less slip than the straight one and consequently will last longer.

608. Le Cellain Lalande Battery. Nov. 6. 1889.

Solution used contained 25% Natta. in disks in spec. grav. = 1.20 - Lines were cast without Hg. but amalgamated. before test - they were 12 thick jars were 4 in number and filled with solution + on top 1/2 layer of paraffin oil.

Test started Oct 6<sup>th</sup> to run a photograph for 2 hrs daily at 120 rev. -

Current at commencement	2.5 amp.
" " 15 Oct	2.58 "
" " 24 "	2.61 "
" " 7 Nov.	0.45 "

as measured by Black Galv.

Height of zinc before test 9 1/2 to 10.

" " after 7. 9 1/2 to 10.

Loss 293.0 = 837.8 g.

Run 62 hr at proper speed, on 7<sup>th</sup> Nov. failed being nearly exhausted.

Took 2.5 amp. as the mean current - then amount of

zinc of est. = 62 x 2.5 x 3600 x 0.0003367 = 1869. for cell

the actual loss is 809.4 "

zinc lost by local action 21.4 g.

609

Magneti

Nov 9. 1889

Mass of iron makes no difference  
Took 5 plates cast iron 8" x 8" x 1/2"

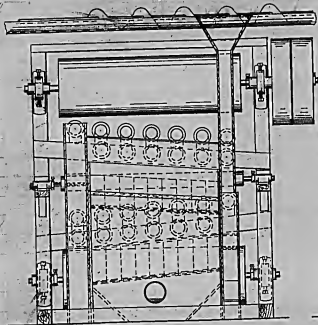
Superposed 400 turn for 1 magnet + 200 for the other  
These 2 were covered with one layer tape + each wound with same size wire 6300 ems long 7. 240 N 9 cells



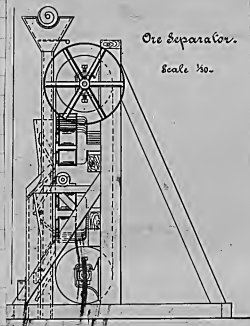


616 Ore Milling.

Nov 29 1899



The sketch shows the machine made for working the Malloy ore - Belt speed 300 ft per minute - Capacity not yet determined but think about 10 tons of concentrate in 10 hours.



Ore Separator.

Scale 1/20.

617 Jersey Ore.

Nov 29 1899

B. Dixon & M. P. Gosan went to Dover to look over some mining properties in that district they have over 100  $\frac{1}{2}$  acres & expect to be gone about 10 days.

Returned Dec 6<sup>th</sup> 1899.

618 Sprague motor Change Dec 2<sup>d</sup> 1889  
 Edison proposes to alter a Sprague motor  
 to run by friction so that the armature can  
 run all the time — The way I propose to do  
 this is as follows:—



A is pinion on armature B is just large  
 gear — There I make cast iron or  
 steel friction gear of this section  
 but do not touch each  
 other — C + D are friction  
 rolls of rawhide or some

other yielding material, and are so arranged  
 that when they are brought to bear on the two  
 wheels, if one touches first it puts no pressure  
 on until the other one touches — By a screw  
 down the drive of the car can start the car  
 gradually — the rolls can be easily replaced

— Graphophone

Dec 5<sup>th</sup> 1889  
 Had a visit from Walter T. Glover of Manchester  
 an old schoolfellow — He has been interested with  
 Edmunds in the Graphophone in Europe.

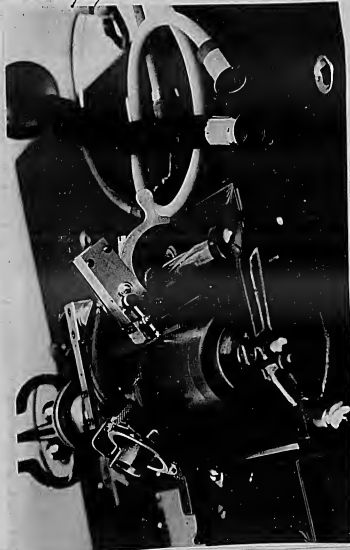
Sheet R.R.

Dec 5<sup>th</sup> 1889  
 We are now making 15 joints per day on the  
 railroad track of the Orange horse road and  
 also laying a double rail of iron 5"x1".  
 It is covered wood & each rail joined to the  
 next by copper expansion joints

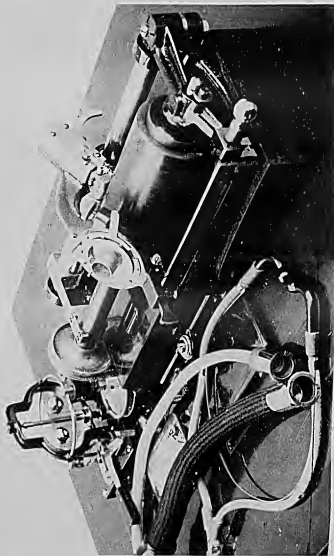


619 The Stenograph

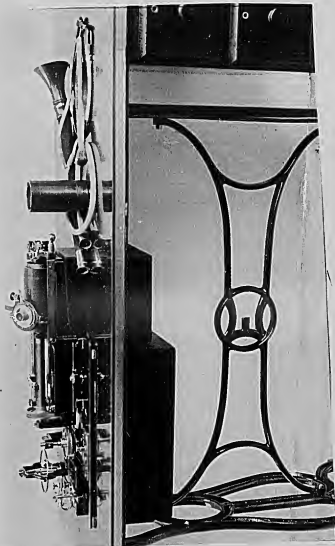
Dec 5<sup>th</sup> 1889



100



101





- 621 Electric M.H. Dec 5 1899  
Tells showing the energy delivered to the  
axis of an equipment can for Orange  
that can on the track the maximum  
gradient being 4%.

Auto per hour	Car running empty		weight	
	level	1% Rise	2%	4%
1	.34	.51	.68	1.02
3	1.02	1.53	2.04	3.06
5	1.67	2.54	3.38	5.08
7	2.34	3.56	4.74	7.12
10	3.38	5.07	6.76	10.14

Car with 30 pax		weight	
1	.51	.77	1.02
3	1.53	2.30	3.06
5	2.55	3.82	5.10
7	3.57	5.36	7.14
10	5.09	7.64	10.16

- 621 J.A. Polson Dec 12 1899  
Edison & Lutz went to Canada

- 622 Edison General C.C. Dec 15<sup>th</sup> 1899  
Advantages today that a quarterly dividend  
of 2% would hereafter be paid.  
They have decided to take up the Magna

B.R.V.M.C. at pan on about the same  
terms in preferred & deferred stock (no cash)  
in the ships were.

- 623 Cylinderwork compound Dec 13 1899  
With this compound we find it difficult to  
squirt as rubber is done as at the tempera-  
ture that it becomes very soft as it goes  
out in oil that lubricate everything & also  
the sulphur in it makes it adhere to the metal  
dis etc. My method of mending things  
from 1 for phone cylinders & to powder  
it up & press it into shape, then put  
the barrel into an oven & heat to 240°  
about. This just allow the oil to come  
out sufficiently & hold the particles  
together, but is not sufficient to make  
it troublesome.

- 624 Electric Light M.H. Dec 15<sup>th</sup> 1899  
Justice Van Bunt in Supreme Court reversed  
the opinion of Judge Andrews and dissolved the  
injunction obtained by the U.S. Ill. Co. L. Board  
C.L. Co. & the Mt Morris C.L. Co. which recalled  
the mayor, the board of Ed. Co. of Mt. Morris, and the  
Committee of public Men from interfering with  
their property.

625 Cylindrical Compound.

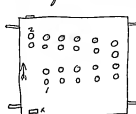
Dec 13<sup>th</sup> 1899.  
Place of this is equal parts of Shellac 17 1/2 parts  
x old Camphor 5 parts

626 The Mearns Way

Dec 13 1899  
1 After moving into our home we found that  
all our Champagnes were bad owing to the bottles  
having stood some time right side up -  
The liquid is permeated with Carbonic acid  
gas and is under considerable pressure, the  
bottles standing up the space between the  
liquid & the cork was filled with gas which  
when the cork got dry passed right through  
it until there was no further pressure  
Always lay on side to keep cork wet

627 Ore Milling Machine Dec 17 1899

170 lbs the best arrangement of 4 616



is to run with 11 magnets  
5 below & 6 above -

The ore is fed to #1 & is  
taken off #2 by two or more  
bellows' fixtures to the belt  
as at X. The face of the  
belt is shut in by two which

is exhausted by a sucker and through which we  
feed at 1. The belt running 15 turns per min  
will deliver about 10 or 11 tons of Concentrate  
per day of 10 hours.

628 Accidental Shock Dec 18<sup>th</sup> 1899

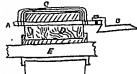
While sitting one of our #4 arrangements  
today W. Kennedy accidentally got the  
full force of about 1150 Volts from one of our  
Municipal machines. It knocked him down  
and the contact was broken - It burned his  
hand a little where the contact was made but  
other wise he felt very little effect afterwards

629 Ore Milling

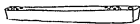
Dec 20<sup>th</sup> 1899  
A test of machine as shown at 627 except  
that 4 buckets were used instead of 2 -  
Time of run 10 1/2 minutes.  
Speed of belt 365 feet per min. 74 buckets.  
75.2% Ore - 42.8% Concentrate  
Concentrate 74 1/2% Tailings carried 62%  
About took all the fine dust away -  
Roughly 12 tons per day of 10 hours.

630 Armature

Dec 26<sup>th</sup> 1899  
Gramme Armature for heavy currents &  
Cone belts. It is quite difficult to make a  
wire armature for 500 Amp 420  
V. which will run true after being  
mounted on the wooden bodies.  
This method is good for shaft  
D is wooden hub on which are  
placed bars of copper the same in number as the Gramme  
bars - these are secured down to wooden body



and turned off on top - the pressed iron wire being one is then slipped on - the top wire is preferably made of wire in many strands as on to have an inside copper to generate fire - Bar A has holes between the ends of the wires at both ends and at the bottom end the wires are connected to the next bar to make a continuous bar - A is also fastened to commutator - it has also much greater section than the other wires as that part has dead wire



631 One Milling Set of Milling One Jan 3 1890  
on machine 616 -

Quantity cast 2400 Caste 1694 En cast per hr

To turn 50 " 70.03 " 6.45 tail.

Best 4.25 ft per min

Quality cast

1600 Caste 1246 En cast per hr

To turn 50 " 71.3 " 5.98 tail, avg

Best 3.60 ft per min -

Turning our regular 20 mesh turn and running it through three times makes it no better -

1 turn or 11 mag. -

2 " " 22 " "

3 " " 33 " "

39.0 mesh diam 150 th

67.33

67.69

67.89

67.33

150 mesh

Mag. mag

85.96

64.66

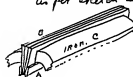
64.33

64.33

632.

Armature

For the motor armature I make a bar armature as per sketch -



Jan 3 1890  
The underneath bar is solid and a great deal larger in section than B - It is also bent out the width of one block as and

secured to the

armature wooden body - The pressed iron wire core C is then placed on + the bars B consisting of three bar bars insulated from each other except at the ends are placed in position + soldered to A -

The brushes rest on B as as to use no commutator

633.

Steel Spiral Spring

Jan 3 1890

Made by Charles Brown h.p. 4 on order.

10 turns of 3/8" steel wire with ends flattened -

1 1/2" in hole - 3 1/2" out diam - 1/2" space between

Coils - 9 1/2" long before compression -

8 1/2" " with 180° bend except 9 coils

1 1/2" " " 360° " " "

1 1/2" " " 452

6 1/2" " " 530

6 1/2" " " 599

5 1/2" " " 665

when released it went back to 9 1/2"

## 634. Artificial Saphire Jan 9 1890

Having difficulty in procuring sufficient Saphire for the photo. work, thought we could make some after the numerous formula given by Jandini, St. Clair Beale, & others. It made some alloy of Chromium or Manganese, or press up heat some oxide so that it would have the requisite hardness.

"1. Crush Alumina pressed 1" round - 20 ton jack - & 5 min in Arc - scratches glass - not Saphire - white

"2. Bismuth Ox. ditto - scratches glass but not Saphire - white

"3. Alumina (plus precipitate) 1" round, 20 ton jack - Arc 1/2 min - crystalline fracture - porous - scratches glass but not Saphire

"4. Tungstic Acid 1/2 test. Charcoal & mixed together and a little flux etc & pressed 1" round - 20 ton jack - made arc could get nothing but a loose friable mass that it was impossible to do any thing with

"5. Tungstic Acid 3/4, Magnesia 1/4 & Charcoal 1/2 pressed 1" round - 20 ton jack - fused in Arc 5 min - button of alloy hard & color of steel when polished - takes a fine polish - when hardened will almost scratch glass

"6. Tungstic Acid 3/4 Magnesia 1/4 } all heated same  
"7. " " 4 " 1 } an 1/2 5 except the  
"8. " " 5 " 1 } Dr. Hy. flame motion  
"9. " " 3 " 1 } of the arc. All too

frangible however to do anything with - hardened they

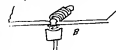


Just

do not easily grind on emery wheel, but are not hard enough, or else we cannot get a good enough edge on it, & our glass is 3-1" was the most metallic & least friable -

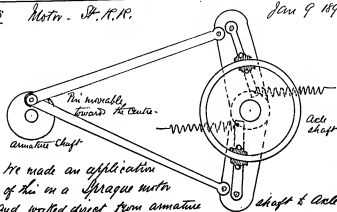
"10. Suppl. Al. 1/2 Sol. Soda & pressed 1" round & in Arc 10 min - dead small rather hard - glazed surface - inside flat crystals - dark colored -

We find that in the arc the substances are occasionally heated and as constantly under the influence of the forces of the arc that we have devised an arc in which the flames is thrown down by a magnet as in B & a movable crucible in order that we can raise & lower it to get whatever heat we want.



## 635. Note. Dr. H.K.

Jan 9 1890



We made an application of this in a Magnetometer and worked direct from amateur shaft & acts getting a variation of 5+1 mile per hour

636. Head Rubber

Jan. 11, 1890

The method at present used by a party in N.Y. for planning head rubber in moulds is to make a bag of the party man and put in a little water or other liquid, they then put in over in tape melted vessels & the heat causes steam & pressure to fill the bag out to the mould exactly. By this means many things can be made of rubber & very cheaply.

637. Artificial SaphireJan 13<sup>th</sup> 1890

\*11 Oxide Al. & Ox. Red (mercuric) & kept at bright red in electric crucible for 2 hours gave yellow crystalline. Red. Red & the oxide Al. is grayish slag like crystalline mass - grinds easily in emery wheel & does not scratch glass - put it in the Arc for 10 min. then cut glass - but easily scratched by Saphire -

\*12 Al. Saph. 5 - Oxide 4 - Al. Ox. 4 (1890)  
Round head button in hydraulic press - 15 min. in arc round head shiny button not porous - cut they for rings - not porous -

\*13. 1/2 Ox. Al. 4 - H<sub>2</sub>O 2 fused 1 -  
made in Arc - small button very dense & shining not at all porous & broke at - for a thin glass & difficult to scratch it with Saphire. Made rings of this & under the microscope the edge is slightly bevelled, making a chip in 3 or 4 sections is now working to see if it will keep its edge - the new 150 cut in photograph & under microscope is as good as at first

638. Artificial Compound (Mercuric)Jan 13<sup>th</sup> 1890

Aluminum comes down a new method of forming the rings of the material - Reheat the mould in the bath very rapidly & heat it up - push the powder in whilst it is in motion it flows toward the rim & forms the ring - the inside is trimmed up by holding a cold burnisher against it just before chilling -

I have suggested this process to Dr. Ellulberg for making duplicates instead of pressure & he is trying it.

639. Artificial Saphire

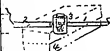
Jan 19 1890

\*4 Boric Acid (pure) & metallic Aluminium

by weight - In the arc most of the Al. was oxidized. The remainder an incrustation - crystalline - steel white - brittle - and hard - cut glass nearly - hardened cut glass but too fragile - shall try different proportions -

Note on \*12 - Had two thin made from \*12 - looked like white glass enamel - in making they worked like Saphire but a little softer - good edge - took 150 cuts in photograph with one & under microscope it looked as good as at first

Note - Crucible for melting without getting the intense action of the arc: 1 & 2 are the arc carbon - 3 is a carbon crucible with sloppa of carbon - they are all 60 into pieces of greenish - the alloy as to get an arc in each hole of crucible which contains

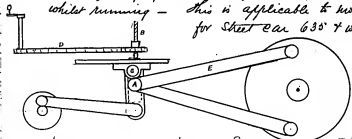


The substance to be melted & kept it white.  
for use in a gaseous state

### 640. Mechanical Motion

Jan 19 1890

Method of varying the travel of a crank pin and  
while running - This is applicable to motion  
for short ear 63° & wheel.



we have made & applied to a Magnus motor #6.  
at Orange N.J. A is fastened to B & can be moved up  
and down by chain D - When A is in position of C & down  
E has no movement.

### 641. Magnet

Jan 19 1890

Magnet of #516 wire 5" x 8" long wound with  
wire & taking current of current. current turned  
new wire are 5" x 17" long. 165° 1/4 x 9. head core  
177 insulated wire. amp. current

### 642. Oil Phonograph

Jan 19 1890

He find that it is necessary to put a piece of  
cotton flannel on the drum & over the wax  
cylinder so that the shrinkage will not crack them

We have made hard rubber shells and other compound  
shells & dipped them in the wax but we find the present  
if bad due from cracks, blowholes, & broken edges in  
too great to be practical

Jan 23 1890

### 643. Diagram of Wax for Bell Rings

A 66" Fall inside 2' x 2' 9" diam  
" 39" " 2' x 1 1/2"  
" 27" " 1' 1/2"



### 644. Compound for Blum late.

Jan 27 1890

As used today at Schenectady -  
Imperial Asphaltum C  
Boiled Linseed Oil  
Heated 250° - 280° Fall

### 645. Water Meter

Jan 27 1890


For Phonograph - Lented today  
Fall for phon. Lens Galls.  
Aliphan } Acting 4/4  
10" Fall 125 5 min 1 gal.  
12" 9" 80 3 " 1 "  
20" 10" 125 3 " 1 "  
30" 12" 125 3 1/4 " 1 "



Magnets Mail -

Jan 30 1890.

1. Current discovery 1879 by Faraday, on a paper which was pressed by a wire carrying an electric current. They are always shown as concentric rings, they do not travel with or against the direction of the current in the wire.

2. It is possible then that an electromagnet is made up as follows: - wire around each wire. The wires will be neutralized between adjacent connections and then wire make a line of force up on outside and down on inside - None of a piece of iron is inserted it offers a path of very much less resistance and makes a magnet. The lines on the outside however are lost and thus would seem to be equal in number to those on the inside. It would seem to be good to make a magnet as:-  
  
 iron inside the coil and also a ring outside.

Gifts Inventions Wanted

Jan 30 1890

1. Gifts Wanted Sub.  
 We that will be black after copying as well as before.
2. Canceling Sub.  
 A good indestructible canceling sub is a thing wanted by the post office authorities.
3. That copying machine  
 A machine is wanted that will do more than accept the

dist. back side have it then - It must lift it up & take it away.

2. Umbrella.

A machine to convert umbrellas all in one piece same as a stretching

3. Ordinary Black - There is as yet no decent Ordinary Black color - There are blacks which show through them a green, brown, or a blue color & others which are fringed when the light falls a certain way, but the real 'black black' has not been invented yet.4. Surgical bandage - A good appliance for holding the patella or knee cap when it is fractured would be appreciated by surgeons.5. Telephone signal - A device for letting a caller on tel. know that you are not in & that you will be at a certain time is desirable as it would save the Central's much time trying to get them.6. Horse shoe - It is claimed that the horse shoe of iron is a barbarian thing - There needs to be one that will save the hoof from undue wear and breakage at the same time permitting elasticity of movement when the weight of the body is on and off.

9





up a trust which we can continuously add to  
until it is thick enough to cut up into shares.  
The effect of the trustful pool is to make it dense  
and free from bubbles.

<u>1891: Monograph Works.</u>	<u>Feb. 23 1890</u>
Jan 31 1891 Assets	
Cash in Bank	30 554.43
Real Estate, buildings, & furniture	123 231.22
Mach. and tools	205 619.80
Labor Materials	356 438.91
Gen. Expenses	92.353.39
Pending credits	792.01
A. G. Mon. C.	144 638.58
Refg. rights	156 000.00
	<u>1 109 622.34</u>
<u>Liabilities</u>	
Monetary Capital	300 000.00
Acc. payable	44 354.89
Mortgage	10 000.00
Sales etc.	426 456.15
	<u>1 109 622.34</u>

Stock named for purchase of Refg. rights & which  
is entitled to share in Co's assets as per agreement  
with S. A. S. May 12 1890 96 720.00  
 Com. 20% added for cash 1840 144 000.00  
 Total entitled to share assets = 240 720.00

Cash stock not entitled to share in  
Co's assets. And representing only a certain  
interest in dividends as per agreement  
with S. A. S. May 12 1890 - 57 200.00  
 After deduction, total \$300,000.00

On 17 March 1891 Board ratified an increase of  
Capital to \$600,000—



			Labor	Material	Total
	Carried forward				879.97
1056	R. Leg Locket	1	2.90		2.90
1057	L. " "	1	2.95		2.95
1058	Body Sorens	1		1.08	1.08
1059	" " Nut		1.70	35	2.05
1060	Head hooks	2	1.40	1.08	2.48
1061	Leg "	2	.60	1.00	2.10
1062	Upper Stud		4.00	54	4.54
1063	Star Screen	2		3.16	3.16
1064	Lower Stud	1	4.50	54	5.04
1065	Phonograph	1	35.00	21.08	56.08
1066	Arm Hook	2	1.50	74	2.04
1067	R.H. Shift Button		3.30	15	3.45
					268.34

At the date we have shipped about  
425 dolls. to R.Y. & have about 400 more  
ready.

We have made the price \$1500 per 1000  
movements complete in bodies  
\$430- per 1000 for assembling the  
heads arms & legs & washing & cleaning

Labor Mfg. \$468.34  
5% for loss. 48.42  
1016.76  
40% Gen. Exp. 406.68  
1423.44  
20% profit 284.64  
\$1708.08

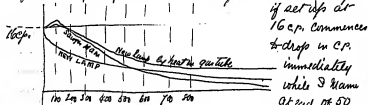
1886 Lamp Manufacture. Last process. Nov. 1<sup>st</sup> 1890  
Over 10 months ago Osborn told me to build a place  
to carry on the following secret process: The building  
is of 4' beam from the laboratory in it was  
+ getting ready for work.

Experiment have shown, that by depositing  
Carbon on the filament of new lamp by the  
method of heating a lot of filament placed  
in a Carbon box which is again placed in a  
wrought iron gun tube closed at one end by  
welding and the other by a screw cap with very  
small oval & placing the wire say a stove



and putting in a material  
which is decomposed by heat  
and which contains Carbon.  
But the carbon will be  
deposited within the pores  
of the filament which is not.

In case if they are flashed in the usual manner  
and that they give a metallic ring taking like glass  
I have had 3 sets of new lamp filaments treated  
in this way after I got them from Tove and  
while the life was no better or worse the candle  
power kept up this:- The present new lamp



have actually goes up 4 ft or 6 ft. Candles. These  
I treated in gas tube experiments; also about up  
higher but not so high as S.M. but did not fall  
so rapidly hence it will make our lamp the  
best in the world. To eradicate the great defect  
in our lamp which is fall of C.P. in first 100 hrs.  
also obstaculally flashed lamps falling occarely  
any. - Reson will receive all his carbon from  
Lipson's house and deliver them back again at  
same place after his treatment. Hydrocarbon  
used by all the electricflashing people do not  
work by the gas tube process and so far only  
Campher gives results. - You may have to regulate  
the vent hole. The Campher is put in the bottom  
of the tube. Then the carbon box which will probably  
hold 200 filament is shoved down on the Campher  
& cap screwed down. - The tube must be  
red hot 3 or 4 in. beyond where the filament  
are. - Take old carbon and try them until you  
get the ring and shine. - By using different  
quantities of Camph. for 1, 2, 3, 4, or 5 hours  
and arranging filament as all can get  
benefit of gas, & varying temperatures you  
will find best effect. (Hiddest yellow seems  
to be best temp. so far). It is important that  
that the filament should at least cover above  
& that they can be duplicated every time.

Perhaps a muffle furnace would be better  
thick Campher is best yet you had better

try Crystal Carb. Acid, & also Strain's Acid  
Then you can produce it all the time get some  
good filament that Joe Fries put them in lamp  
and have Bechler run a curve at 520 C per HP.  
He takes every day - Then then you can see  
effect of different deposit and then make  
such changes to make better curve. - That I  
want to read is better C.P. at end of 100 or 200  
hours than S.M. When this is set up at  
Lansing marked on them & runs at 10 per HP  
or 24 Cand-ls

60¢ Dolls. toward and saved total Mch. Y 1890  
#31

		1890								
		Nov.	Dec.	Jan.						
1	Mary Kid.	126	143	182						
2	Lowmber.	207	334	300						
3	Little Girl	16	123	401						
4	Refugee	93	183	249						
5	Sam Tucker	45	151	242						
6	Hickory St.	134	161	233						
7	Jack Home	52	94	194						
8	Black Sheep	12	109	251						
9	Jack 1912	88	138	191						
10	Two Little 1810	51	218	365						
11	Walter Haddock	63	216	397						
12	Two 3 Cays. ms	113	186	237						
		1050	2006	3360						



662 <sup>1</sup> Small left for England Jan 19 1890  
Returned Dec. 14 1890

663 <sup>1</sup> A Chain left for Charlotte N.C.  
Feb. 1890  
Returned. Mel 18 1890

664 <sup>1</sup> Ann Nathanian Mel. 24 1890  
Wid at Villard's + met Nathanian —  
Ancient Nathanian, Basim, Carl Schurz —  
Lowery, Gouraud, Hersch, Solomon  
Wae — Small, Elton, Sprague —  
Herrick — Major Elton —

665 <sup>1</sup> Mrs. Gold Toy  
\*36 When the tracking is too deep the recording  
knife throws a bump up on the back that is cut —  
then the reproducer ball comes on it presses  
him down + makes a scratchy one which is  
always so — This has been the cause of much  
of our scratchy work.

666 Silver Lake Mel. 26 1890  
Sailed out today the Ship # 3  
the Sunday and the Power station + then  
Barn then position before I go away.

667

Alphabet Sentence Mel. 29 1890  
As the letter of the alphabet in my sentence  
1 Mr. Brady gave me a black walnut box of  
quite small size 24 letters (Shelton)  
2 Lacked my box with five dozen liquor jugs  
32 letters (Shelton)

668

Olson Phonograph Works stock Mel. 30 1890  
Received today from Olson 193 <sup>1/4</sup> shares  
being my 10% of 947 <sup>1/2</sup> shares of stock +  
also of increase when capital was made  
\$600,000 — This stock is regular + I am  
entitled to 10% of 1185 <sup>1/2</sup> shares that may  
participate in dividends which has been given  
to Olson





## EDISON'S AIDS

The Great Inventor's Right Hand Men.

WHAT THEY HAVE ACCOMPLISHED IN THEIR SEVERAL FIELDS.

A Succession of Triumphs in the Material  
World. Aug 5

Detroit Free Press 1888

[illegible][illegible]

Stigum Bergman, when he came from Germany, could not speak a word of English, and so he somehow managed to get acquainted with Edison: "His work spoke for him, and through a trained mechanic he took a huge leap into Edison's Newark shop soon after Mr. Batchelor accepted a similar position. In 1878 he opened a shop in a small front room at 101 West Street, his family occupying the rear portion. Here he proceeded to manufacture electric bells, burglar alarms, and similar small work, his force consisting of one man and two boys. When the phonograph had been invented, and Johnson was casting about for some one to make the instruments, Edison recommended Mr. Bergman. This led to a

It is

business partnership and a personal friendship between Johnson and Bergmann, which will doubtless last as long as both are alive. Mr. Bergmann made the photograph so promptly and of such superior quality that he secured all subsequent similar work, and to this continued to refer to Johnson as his "special customer."

While Johnson was in England he advertised for bids for the construction and delivery of a large number of telephone exchanges. Replies were received from the Siemens, the Silvertown, and other celebrated works, in which Bergmann was the principal person. The bids were satisfactory. He placed the order with Bergmann, who had the goods produced at a very low price, and to be delivered in a short time, the intervening ocean notwithstanding. Mr. Bergmann then received a further order from England for 2,000 telephones, or \$120,000.

[illegible]

Low Grade Iron Ores.  
 Test of iron ores taken from  
 sands, in Putnam Co. by  
 myself :-

solution of Clay. The process is very cheap and surprisingly simple. Pure Karlin contains 83% of Al. From the clay I am using I can get 16 1/2% metal - The process is entirely different from any ever tried before -

New Ore. Nov 8 1890.  
 Low pass. East of middle cross of  
 Fish-Take Mine from samples  
 taken by me there.  
 Concentrations are  
 N. Mag. 100-0.95 1759 New  
 N. Mag. 37.6" 2691 Section  
 5891.  
 N. Mag. 379 1666 1213.  
 N. Mag. 112.5" 8314.  
 East of Samples taken by me of  
 deluge ore from the Summit of  
 Dean Mine. N. 4. 4. Nov 10 1890  
 Magneite. 40 Mead.  
 N. Mag. 294 g. 8713 7035  
 N. Mag. 7" 2223 deluge  
 Section

Nov. 26 1891  
The Reading Coal and Iron Co.  
2/ as taken by Edison &

- \*1 10' from hanging wall near Wolcott's house. eastern 4.94%  
 \*2 26' " foot wall " " 4.72%  
 \*3 Around corner. Near NW & regular road " " 2.89%  
 \*4 5' from foot wall. dip NW. " " 1.42%  
 \*5 Shaft #1 6' from vein " " 10.09%  
 \*6 " " " 20' " " 9.03%  
 \*7 " " " 15' " " 18.10%  
 \*8 " " " 10' " " 8.5%  
 \*9 " " " 7' " " 2.89%  
 \*10 15' from hang wall beyond 2<sup>d</sup> shaft " " 9.01%  
 \*11 Near top of ridge where big mass just out of hill  
 60' perpendicular 11.58%  
 \*12 75' NW vein - top hill - perhaps 100 ft. 7.42%  
 \*13 500' from vein NW side 1.08%  
 \*14 Edge of hill 30' from small hole 19.72%  
 Note: \*13 is on the hanging wall side & \*14 is on foot wall side - \*14 is on edge of a periphery about 200' high & about 500' long the vein running parallel to it about 30' back.

## Magnetism.



Jan 9 1891  
 Took the magnet from a 1000 Max-Chain dynamo and mounted it with suitable pole pieces as per sketch -

Shallots: A small piece of shallot hung in a silk fibre tends to turn its longest axis in the direction of the lines of force when placed between the poles at x. If it made in shape of a needle it will turn in direction of lines of force quick. It is not however attracted

by the magnet.

Cork: - Small piece of cork oak similar but weaker, no attraction.

Saphire: - Oak similar to cork's strong. No attraction. Piece of wood match: - tends to act similar but only about as strongly as cork. No attraction.

Glass sphere: - No movement at all. Of course this should not be as there is no long and short axis. I set this sphere spinning rapidly and then charged the magnet but there was no apparent effect.

INDOS

Glass tube: - This acted weak but in the opposite direction. Instead of tending to set lengthwise with the lines of force it set across them. This shows that glass is a poorer conductor for lines of force than air. I thought at first this was a repellant force but on investigation the magnet neither repels nor attracts it.

Weights: - Jan 12. 1891.  
 Myself: May 1890 162 - 10% = 151% lb.  
 " Jan 1891 167 - 9% = 158 "  
 Emma: May 1890. 115 - 12% = 100% lb.  
 Rosa: " " 120 - 6% = 113% lb.

Alaska Ore: - Jan 12 1891  
 Samples from Star Key, Angoon Island, Alaska.  
 " I have white rock sprinkled with iron pyrites  
 Effendi's Cove: - May 1891, Star 01453 to bin 2500 lb.

\*2. A hard white rock similar to #1, but seems as if it had been confined to the weather which makes it crumble. Effervescent. No fossils; 0.25 of Silver to the 2000 ft.

Ogden N. J.

Jan 31 1891

Oliver, H. L. Cutting, Perry, Upton & Ogden today.

Railroad to Hunt Mine

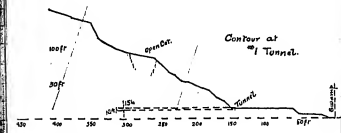
Feb 12 1891

Reps brought the finished survey of Cold Spring route to my house tonight.

Hunt mine:- A magmatic bed of the walls of tunnel #1 on the Philips vein of the Put. & H. Co. property in Madison Co. N.Y.

The vein has been worked out to the surface and the tunnel runs in 156 ft from mouth to hanging wall, then 33 ft to the left there is a cutting into the hanging wall of 8 feet. Tunnel is vertically 166 ft long. No rock was blasted out each side as we to get a piece from each foot that had not been exposed to the air.

Four samples were ground up thoroughly, mixed & passed through 70 mesh, so as not to have an excessive amount of fines. 20 grammes of each were taken and the air separated from it by a magnet, and thoroughly cleaned by constant working. The air oxide was then weighed & reduced to the amount of water.



Dist.	Vertical	Horizontal	Alt.	Height	Width	Area	Depth	Volume	Area	Depth	Volume	Area	Depth	Volume
1	10	46	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
2	10	47	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
3	10	48	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
4	10	49	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
5	10	50	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
6	10	51	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
7	10	52	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
8	10	53	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
9	10	54	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
10	10	55	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
11	10	56	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
12	10	57	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
13	10	58	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
14	10	59	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
15	10	60	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
16	10	61	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
17	10	62	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
18	10	63	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
19	10	64	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
20	10	65	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
21	10	66	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
22	10	67	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
23	10	68	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
24	10	69	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
25	10	70	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
26	10	71	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
27	10	72	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
28	10	73	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
29	10	74	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
30	10	75	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
31	10	76	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
32	10	77	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
33	10	78	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
34	10	79	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
35	10	80	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
36	10	81	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
37	10	82	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
38	10	83	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
39	10	84	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
40	10	85	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
41	10	86	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
42	10	87	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
43	10	88	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
44	10	89	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
45	10	90	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
46	10	91	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
47	10	92	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
48	10	93	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
49	10	94	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
50	10	95	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
51	10	96	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
52	10	97	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
53	10	98	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
54	10	99	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
55	10	100	1.00	0.1	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50

Feb 11 1891

Opden Mine N.Y. (Copied Feb 1897) Mch 2 1897  
 Adams estimate of producing 1 ton of 66% concentrate in  
 the bin from 28% ore & losing 2% in the tailings

Stiffing	# 0.07
Winning at 30¢ 3 1/2 ton	1.05
Conveying	.05
Crushing & 1/4 mesh separator	.39
Reconveying 1 1/2 tons	.18
Mine Royalty	.25
One Milling Co.	.25
Loading	.05
Brokerage	.12
General Expense	.15
	<u># 2.66</u>

Lo be sold at 8¢ per unit - At bin per ton \$5.28

Iron Concentrate: (Copied Feb 1897) Mch 9 1897

Washing	
Ordinary Concentrate from 100 mesh of <u>Bank Mine</u> ore	
Summit "s" accepted	21,800 gms.
After washing "	17,550 "
	Loss 3,250

About 15%, but resulting concentrate so much blacker  
 that it would sell for higher price

I find a very tarry concentrate got from 263 & 278 on  
 4 tumblers continuous Bank Mine. The 20 feet is full of this pe-  
 trol kind of ore but as tarry that after separation through  
 100 mesh I got the following difference with careful  
 washing: - After 10968 mgs about 25% %.

After 7824 mgs  
 5141

Magnetite Iron Ore Lignite (Copied 1897) Mch 22 1897  
 Carter line and tunnel to Bank Mine.

Sinking percentage every 10 feet (from specimens every foot) from  
 77 ft 207 feet, a total of 180 ft wide would average about  
 of material used 100 mesh.

Feet	For Sample	For Sample	For Sample
77 ft 27	10 14.33	137 ft 187	10 20.25
87	10 17.57	157	10 20.90
107	10 18.72	167	10 18.86
117	10 9.75	177	10 32.52
127	10 10.43	187	10 7.24
137	10 12.35	197	10 7.02
		207	10 10.50

The would average 16.66% magnetic iron.

The ground up to 77 ft after 207 up to 293 would be less  
 than 10% on an average.

Again: -

77 ft 111 feet = 34 feet wide average	16%
111 ft 130 " = 19 " "	9.46%
130 ft 175 " = 48 " "	20.5%
175 ft 204 " = 25 " "	26.62%

Now if we base the descent & front of these as two 'horizons'  
 as they are cut, we have them: -

34 feet	16%	544.94
48 "	25%	1201.80
25 "	26.62%	665.50
<u>107</u>		<u>2412.29</u>
		22.64% avg

Melden Mine N.Y. (A. T. 1891) Nov 26/1891  
 The Melden Mine was Opened N.Y. have got a wet concen-  
 trating plant working and are shipping about a car load  
 a day. I got some of the concentrates and tailings  
 and after drying them put them through 100 mesh and  
 separated them with the following results:-  
 20,000 mg. Cu. 19,000 mg. - 68.78 Milled Ore  
 20,000 mg. Fe. 9900 - 35.88 "

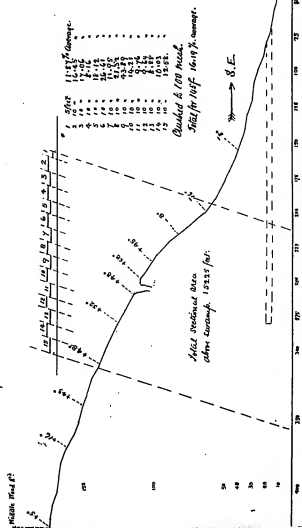
Note were quite coarse some of it about the size  
 of #10 mesh.

Manufacture Camp. (O. 1891) May 16 1891  
 Height of air: I took a barometer at Camp 1600 ft.  
 and read it at 1070 ft. then weighed it. 31.355 grams,  
 scratched it & let in the air and then weighed it again.  
 31.539 mg. making the weight of air 170 mg. I found  
 its capacity about 150 c.c.

June 1 1891  
 Adams, J., Perry, Cutting etc went to M.P. to buy  
 the Ogden Mine for which we paid \$20,000, afterwards  
 Adams & J. went to the Reading N.Y. & got the right  
 to form a company to work the property at Sault Mine

Croft Mine June 2 1891  
 With Bush, Montrose Phelps up to Croft Mine, then  
 up to Oronoco Lake then to Sault Mine  
 June 4, 5, & 6. With H.D. Adams at Sault Mine, Canada  
 Mines & all Mine between there and now, and  
 on to Tuckerville to see Bush.

Sault Mine, Sault Ste. Marie, N.Y. Jan. 11 1891 29  
 "Y. Carbon Line at 2500 feet showing for analysis  
 of iron.





At Cold Spring, Ga.  
Mines have now got the  
bikes, engines, blower,  
+ tools for equipment.

June 21 1891

Small told me today  
that the H. J. + P. C.  
Mills were doing  
\$600 per month.

T. +

June 26 1891. Sale of Bay for silica, sulphur, phosphorus  
and lithium acid. by Brook Farm + others. Plot # 1.  
\*1. Taken from C. + B. owner yard. Parkville N. Y.

\*2. " " John Price " " "  
\*3. " " Herman Avery Parkville Point. N. Y.

They were collected as being particularly free from sand,  
quartz etc, especially \*3.

	*1	*2	*3
Silica	58.40	58.03	59.75
Sulphur	0.232	0.226	0.276
Phos	trace	trace	trace
Lithium Acid	1.53	1.55	1.20

At Mt. River resigned as  
superintendent of H. J. + P. C. works  
I took soundings in Reeksville Bay with a view to our  
own terminations of the drift mine R.R.  
Saw Olton at night + rode with him from Orange + Summit  
to take on final answer to Senator Jones on drift mine R.R.  
and finance property right of way

Drift Mine R.R. June 30 1891  
I wrote Sen Jones final answer. \$1000 for all R.R. complete  
and right of way over finance property.

Hannaganses River. July 3 1891  
Up to Newport last night + over to Hannaganses River today +  
engaged rooms at the Reeksville house









The great mag. or. vein called the Smeag runs NNE-  
SSW.

Codyte.

Sept 22 1897

No. 3, 7 the girls left Hoboken on the Stie of the Kent-  
man Lloyd line for Bremen. - KOTW. Joffin went a-  
dieu from the deck. - Immediately after we got under  
way we saw and salute the Alta of the same line coming to-  
ward Sandy Hook 10:50 a.m. and at pilot off at 11:00 a.m.  
At 3:00 p.m. met the Prinsland of the Red Star line bound in  
to U.S. Capt. Willigade and the officers generally a  
sturdy looking lot and seem to know  
their business. - Girls already under  
the influence of sea sickness but not  
sufficiently to stop them from enjoying  
the fine weather. - Noon came down  
bravely to dinner but before the second  
course she found she had forgotten to have  
something on deck and returned.



Sept 23. - Beautiful morning - sea deep blue - not  
quite so much motion - girls on deck early but feeling  
still the motion of the vessel - Run 422 miles -

Sept 24 - Fine weather - hard winds - skipping a good  
deal of water - klama and girls about same, no worse,  
although it's rougher - Run 413 miles - passed a  
hark very close - boat astider -

Sept 25. - I think we must be on the "banks" for I spotted  
out of the port hole at 5 a.m. and saw a lovely schooner  
with no sails at all sailing around horribly - the heavy

Text

swell makes our clearest path and sell - girls still  
under the weather, klama especially - the boys very  
enthusiastically it's her last journey, then in a low tone in  
this direction - 416 miles -

Sept 26. - Fine day - wind southerly and warm - heavy fog  
yet - All evidently better - at noon dock at 5:30 a.m. I  
notice on the chart that we take a very easterly course -  
445 m -

Sept 27. - Very breezy - barometer going down - strong  
east wind - quite warm but throwing a good deal of  
water - 448 miles - klama worse and girls also -  
One grand boat went topsailing on the deck with  
about 40 chairs, he live his clothes badly - very bad  
night for the girls

Sept 28. - Weather moderated but nothing badly -  
klama very sick during the night - Rainy and misty,  
suggestive of the English coast - 459 miles -

Sept 29. - Passed Lizard 7:15 a.m. at 4 p.m. 2:15 a.m. -  
Sandy Hook to Lizard 109 hr 22 min. - No  
passed and saw Old Lyme Lighthouse although quite  
a distance off - nice calm morning - all well now  
and no sickness - no seem to have lots of company  
all along the coast - all kinds of craft going both ways -  
We noticed Folmarth Bay and Portland Bill - the  
great rocks of granite and colored sandstone at the  
western end of the Isle of Wight having a bare face on them  
about 600 ft high are very imposing and entirely over-  
shadowed the three bare rocks called the "Needles" at the  
entrance to the sound between the Island and the

mainland - Row at Southampton 16th Yr from Sandy Hook 3000 built - We did good bye to each of the passengers that we had become acquainted with that left the boat here - On turning to go out of the port we passed across and got an excellent view of Bournemouth the Dorset island residence. In going to see the forts by the circular forts in midwater - There are 14 of these harbor fortifications

Sept 30 Anchored about 5 p.m. near Bournemouth and after considerable delay & waiting at the Customs houses were shipped forward to Bremen arriving 10:30 p.m.

Shipped at Altman's - Mr. Stubbins and family were very kind and gave us quite some help Oct 1st Bremen - Its coat of arms a key

The Cathedral 11<sup>th</sup> & 13<sup>th</sup> Cent.

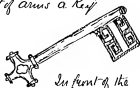
Procession given by Queen

Christina of Sweden 1682 -

First coat in bronze in 11<sup>th</sup> Cent.

In front of the organ are some reliefs dating from 10<sup>th</sup> Cent. very well preserved - The Rathaus - built 1405-10, facade on S.W. side in 1609-12 - Upholstery a picture by Wilhelm 1870 Battle of Langens - Some specimens of old carving on doors and stairs

At the Keller's - Lunched here and drank some of their old wines - visited the cellars - I noticed some of the wines 1 or 200 years old were cheap owing first of all to bad vintages - I notice also that the difference between a 5 & 6 mark wine is very perceptible but the difference between a 6 and a 15 mark wine we could



scarcely distinguish - The Market place - The Kaiser's bridge, a very handsome bridge from which we viewed the river traffic - The cattle boats with their blunt noses and side wings - also the boats drawn by dogs.

Oct 31 - Bremen to Hanover miles by rail -

By the Hotel, lighted by incandescent lamps, small central station close by - I notice all the cities here have large fine Railroad stations and the roads come into the centre of the town on fine substantial brick viaducts; many of these are utilized for business purposes - Rose permanent ways are made quite ornamental when they run through the better parts of the city - The Oct & St. building is also very fine - Churches all belonging to and run by the Govt. are frequently combined in one large building - In Hanover - The Marienplatz

10<sup>th</sup> Cent. - Old

St. Peter's - The

Academy of Sciences

The High School

formerly a

Palace - The

Palace of the Emperor

with the German

Bank - The



Palace House - The Stadthaus - The Museum - The Palace of the Duke of Brunswick - Museum - and City buildings all are worth seeing - The electric cars - The opera house is very fine - We undertook here to listen to German Opera & heard nothing for Sanhauser, but found it as depressing



Not it is not  
clear that we  
shall try it a-  
gain

Oct 5 -  
Hamburg to  
Frankfurt  
Express 55

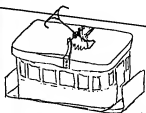
miles an hour - Also is as fast as you can travel in Ger-  
many - Country entirely agricultural, every bit of ground  
being cultivated like a kitchen garden - passed through  
Göttingen where we noticed the University buildings and saw  
a number of the students at the depot - saw that a number  
had their left cheeks badly slashed.

Frankfurt - Railroad depot largest in the world - front 220



meters - 3  
Spans 56  
meters high  
and 22 1/2 m.  
wide - 209  
trains daily  
passed Aug  
1877 -

Station lighted by 24,000 incandescent lamps - View  
on the river Main very fine - Bridges - St. Bon -  
the Carthen Haus Art - Börse - Paul Kirche and Wil-  
stalt Kirche - Kaiserstrasse - Goethe Haus - the Römer  
and Kaiser canal - Fine Zoological Gardens -  
Frankfurt has two electric railways both running to



shows wiring on stage from a  
short distance from center  
of town - One uses the  
double battery system of  
Siemens, similar to the one at  
Paris in 1871 - the other uses

put up by Siemens but is a single

overhead wire system - The arrangement of making contact  
is not by sliding wheel, but by a piece of copper wire resting  
against the main wire shield against it by a spring -  
It works well and seems good and cheap, requiring no  
attention; it does not spark and sputter, which you nat-  
urally expect it to do - It is as wide that they have no  
trouble at joints & crossings - All the poles which are  
on both sides of the street are iron and ornamented -  
Exhibition of Electricity - Noted Siemens, Schuckert  
and other types of dynamos - saw the transmission of  
power going on between Cuxhaven & Hamburg etc etc -

Oct 8: - Frankfurt to Nürnberg - 157 m. express 5 1/2 hr.  
at 38 m per hour - Country very picturesque - every few  
miles a little village consisting of old gabled, red tiled  
roof houses, and a church spire rising from the middle  
- Country as usual cultivated like a garden -  
considerable forest (as they call it) but in which I see  
no timber; all being allowed to grow to small woods  
& probably cut and sold -

Nürnberg: - Dom - Museum quite good, with  
many examples of old wood carving - St. Sebaldus  
Church - Diner house - Maple, Gaebele -

many and good — Small bronze monuments, such as the little stone man, in Market Place and others, all dating back to 1500, wonderfully dense — Quaint old houses with rich interiors — Towers and walls — Follies — Dug well out out of the solid rock 380 feet deep and made long before any powder in use — Subterranean passages to it — Nuremberg is a most important manufacturing town — Its Electric roads or Electric light stations — In the City of the Hotel Strauss they had an installation of incandescent lamps, all red lamps — not used whilst we there —

Oct 11 — Nuremberg to Dresden.

Scenery quite picturesque — Passed through Culmbach famous for its beer — As we cross the border of Saxony we notice that everything looks more prosperous than in Bavaria; the cottages changing from old fashioned (and generally poor looking) red tiled, high roof buildings to neat white cottages with slate roofs and built up in better order — On the railroad we noticed the service better; the men looked swifter and the locomotive they attached to the train was the finest I have seen in Germany — We noticed ten very fine biaducts on this route one at Bautzen Electoral and the other at Goßwitzthal 728 yds long. As usual this journey (express) was done at 25½ m per hour —

Oct 15 1891 — Dresden —

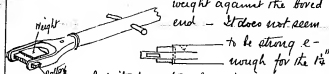
We have been here 4 days — No risk with a kelins attack, Dr Knoch attending her — Have engaged a suite of rooms at the Europaischer Hof, Parker 2

bedrooms + hall room 12 m per day — Have visited all the best schools, + have decided to commence at Frankfurt Oct 19<sup>th</sup> — The Europaischer Hof only opened Jan 1891 + is best hotel here, elevator electric lights etc etc

The Elbe here is a very important river; it seems to have a large carrying trade — Steamers come up with long tow of heavy long flat bottomed boats by means of a chain laid in the bed of the river, and the loaded boats go down by stream — On the dock I saw boats being loaded from cars that had apparently come from Austria and I judge that Dresden is an important station for exporting from west of Austria, the barge taking goods down to Hamburg where shipment is made in ocean bottoms — His looks more reasonable than shipping by Leipzig especially if they can ship through Germany in bond —

The collection of paintings in the Dresden museum is very fine — Raphael Madonna — Guido Reni — I was surprised to find what very fine work was done by Holbein — I always thought he was a painter of Dutch beauty like Nikens — Some of the modern paintings were very fine — Norwegian scenery — Bois on a cliff watching a caravan — Richter and Dr Byet — Degeger — etc — Museum Johanneum — Very fine collection

4 Amur - about 80 mounted horse figures - in full armor, most of them unstable & pieces worked - very large collection of flint lock pistols and guns of 16" & 17" Cal. - Great variety of swords, one of 1249 - one of Luther's - variety of hunting swords some with scabbards provided with a dinner set & chairs for seating - I saw a broad loading cannon dated 1576 about 6' long and 1 1/2" bore the breech was like this - a girl held a weight against the bored end - It does not seem to be strong enough for the 1 1/2" bore but I think they had the idea and



applied it -

1st letters here from New York dated Sept 20<sup>th</sup> from Albert Spatter

1<sup>st</sup> The contacts with Jones Livingston & Schorn - machos in regard to buying the Craft mine K.K. and leasing the Craft mine were closed on Sept 30<sup>th</sup>.

2<sup>nd</sup> The Pitt K. Coal & Jim Co. gave a price for cutting wood on the property the following:-

Railroad ties	12¢ each
Telegraph poles	70¢ each
Fence pick	7¢ each
End Wood	11¢ per cord

3<sup>rd</sup> The mill at Ogden has not started up yet on Oct 4<sup>th</sup> but expected to on the 10<sup>th</sup>. Mr. Perry the treasurer made the last call on the \$100,000 increase

payable on the 14<sup>th</sup> inst

4<sup>th</sup> Letters from Frank B. Jones sent him say: they have made a clearing from prepared mill site to end of Horden's fields and measured for a dam to go about 800.00 on cut ft. of water & run into 1 1/2 ft of mill or about 200 ft about mill site - they have tested smallley frequently & find it very good for our purpose

Oct 11<sup>th</sup> - Went to Reelin - Met Mr. Seibel and Upmeyer & dined with them - Had dinner - new with Katherman at his house and saw one of the Central Stations with 3 large 1500 H.P. light, explosion engines in it - very clean, neat, & good installation - most of the apparatus was made by Siemens & Halske

Oct 19. Visited Bergman & Co. and went round with Seibel - Firm composed of Bergman, Knut, and Seibel - they make interior conduit apparatus for house wiring & have 6 machines running on different sizes - they intend making all kinds of apparatus for installation work.

Attended to Broaden direct road - saw women in the fields doing all kinds of hard farming work - I see women & boys harvesting together drawing big loads and there only want a man complacently sitting on top smoking his pipe to complete the picture - Dr. Horack says he has seen that but assures us that he does not approve of it.

Oct 1891.

From Dresden telegraphed to Berlin station-master asking if I could have a ticket on express from Berlin to Ann leaving at 9:00 p.m. (it was then 10:00 a.m.) I would get on at Magdeburg & pay from Berlin (answer paid). I got no answer to it not to one sent after it & so if I had no answer. Moral - Don't try to use Express.

Dresden to Klen. - All day at it arriving at 10 p.m. Oct 21. On arrival I found that I could get a sleeper at 11 p.m. for Paris - paid 14 marks (\$56) to be squeezed up into a compartment with three others and was turned out at the frontier & had to wait in the depot for 1 hour while the baggage was examined - It would be much better in future to travel to your rugs & a seat in the ordinary carriage - Oct 22, 1891. - Paris at 7:30 a.m. - Went to Hotel - Dined & ascended the Eiffel Tower, it is a wonderful structure - Noticed when up only 100 metres the height seemed tremendous, but on going up 200 metres more this feeling did not increase.

Dined at Mr. Oudin's tonight.

Oct 23. Paris to London via Rouen - rough voyage arriving London at 6 p.m. - Hugh Wolfe dined with me at the Charing Cross hotel & we spent a pleasant evening.

Oct 24. Left for Sandhurst - to spend Sunday with my sisters - stopping with them were

Hugh Wolfe's two daughters, bright girls, & Miss S. Radford - Sunday we took a drive around the "Heads" & by Golders Park.

Oct 26 1891. Left for Liverpool & took passage on steamer "City of Paris" for New York, at night went to Manchester - Queen's Hotel -

Oct 27 1891. - Boston reached with me - Mr. Samuels & Ed called and Jim & Tom dined with me - Mr. W. W. Seligfeld called in the evening.

Oct 28. - Lou, Maria, John W. Seligfeld, Harriet & the Kitz girls, Harry & Loral Collins & Joe Brooker saw me off at Liverpool - Voyage rather rough - fellow passengers Mr. W. W. Carnegie, Maria Van Goudt, Mr. Behrens of Manchester amongst them -

Nov 4 1891. Arrived in New York -

Nov 5 - Went to Ogden H. J. & at mine all day with Edison - His directors of H. J. & Co. Works have proposed a further increase of capital to \$700,000 which will be satisfied at a meeting shortly - Bought 19 shares at par - I see no reason for any alarm as regards the plant Mr. Schwartz has been discharged for incompetency - the many little difficulties to be overcome in straightening out things here were too much for him - Mr. Connolly is here superintendent & Thomas is mechanical engineer - A very large amount of material



taken out by Odessa after the horse failure has been used for other things and although there is quite a good deal thrown away there is nothing like the amount we expected to lose.

W. Odessa figures now that mill #2 as regards the crushers and rolls has a capacity of 120 tons an hour -- How many hours per day can be run has not yet been determined -- The new Ridgewood Cattle is all O.K. and running 1 skip (3 low) every 6 minutes -- The old crusher from the Beechville plant is in place with a #32 motor ready to deliver to the small crushers as a help to the big one -- They are putting up a track to dump ore from the Opden into the crusher bins -- The crusher bins have been arranged with heavy timbers, the inside lined with thick plate iron -- There are two (one for each cable), either one can be used -- All the rolls and magnets have been supplied with a new roller feed & they work first rate -- All places, where the ore is delivered to a belt are provided with boxes that do not allow of the ore coming down with a rush, but let it down gently at the speed (about) that the belt is running and a curtain over this box ensures the minimum amount of dust -- All bearings have been provided with grease cups, and these work better than the dust proof bearings

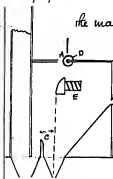
Every time the handle of the grease cup is turned a little of the grease squeezes out and forms a collar at each end of the bearing on the shaft which prevents the dust entering.

Odessa says 1 unit in the ore is 31 lb. The 50 mesh screen are being cleaned with card cloth with rubber back instead of with leather back. The screening capacity of this mill is much too small, if it was sufficient the mill would run through 2600 tons in 20 hours.

Nov 6 1891 Opden R.F. -- We decided tonight to change all screens in #2 mill and make them better & more accurate -- Thomas made the design -- Each screen is composed of 11 wheels of spiders into the periphery of which were 4 in O bars, 4 in had bars the screen holders are clamped with 1/2" rubber for a cushion.

Nov 9, 1891, Opden. Have made arrangements with the Morris Co Mach. & C. to cast the wheels & attach them at the laboratory turn the bars for these screens, the Parsons being kept of Paterson are rolling the iron 5 1/2" x 9 1/2" -- one end by team to be delivered at Laboratory Wednesday -- Attention to turn them all up there & send them to Opden.

Separation: -- We have made a number of experiments to determine the best conditions for working.



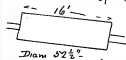
the magnet and thin feeds, the result of which is:-

Glen A 1 1/2" 1 1/2" 2 1/2" 1 1/2"  
 " B " 1" " " 1"  
 " C " 3 1/2" " " 3 1/2"  
 " D " 4" " " 4"  
 " E " 20" " " 20"

One quite damp while working.

Rev. 15 1/2 Opden M.

Process:- Rate of progression through screens



1 1/2" per foot incline -

Rev. 15 per minute -

Sufficient ore in screen to fill a

chord 1/2" of the circle or about 24"

side - Surface speed 177 feet per min + ore was raised up inside 2 1/4" of the circle or 20 1/2" from bottom

A piece of coal dropped in took 28 sec to come out - this was an average of 6 tests

Coverage of ore in mill #1

Crude 15.30

Concentrate 37.25

Sludges 4.08

Five Roller crushing:-

As the rolls are now running we made the following test:- We took a bottle of ore, as it ran into the fine roll on each line + found out how much of it would go through 14 mesh + then again underneath the roll; #1 is the fine roll on the line furthest

away from the engine side; on top a bottle weighed 29 1/2 lb bottom 50 oz.

Top row through 14 M.

Bottom row through #1

1	8 or 2 1/2 %	21 or 7 1/2 %
2	6 1/2 or 19 %	9 1/2 or 31 %
3	11 or 38 %	20 1/2 or 68 %
4	4 or 2 1/2 %	18 or 60 %

Of all the ore passed through the rolls crush to 14 M

1	4.8 %	8	81 %
2	13 %	4	36 %

this has nothing to do with the 14 mesh that has already returned.

Nov 14. Opden M.

Brown Crushers:- Capacity of 4 B. crushers No 1, 2, 3 + 4. No 1 being the first to receive the ore. got a greater percentage of fines -

The ore was caught in a box 5" of the width of the stream for 5 sec. + calculated to tons per hour - As the stream spread out we put box in different parts of it + took the average - the ore returned to crusher was taken in box for 10 sec + deducted - it was found that the 4 crushers averaged 26 25 tons each per hour

Crush Rolls:- Test for capacity - this sheet ran through against rolls for 5 sec - ore in pile - through 3" of stream - fed well open 1 1/2" - + 15" per min.

#1 small roller	8.4	#3	4.6	very much fine
#2	8.46	#4	8	and damp.

Nov 16 1891. Sunday. Adams, J. & Connolly went prospecting at Hopewell Caverns took samples all across the same vein as Ogden for about 200 feet & brought them back with us for test

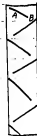
Nov 16 1891. Ogden M.J.

Self crushing - Let to see the state of working of the screens, the  $\frac{1}{2}$ " & the  $\frac{1}{4}$ " rolls on #1 & #2 series - Portions of ore taken above the rolls & weighed & the percentage of what would pass 14, 10 & 5 mesh taken; again portions taken from under the rolls and the same particulars noted & compared - each sample was lifted in 14 mesh pan

than 10 and 5	14	10	5	and
#1 Series Above 15%	30%	11%	12%	18%
" " " bottom	40%	10%	17%	15%
" " $\frac{1}{2}$ " 15%			2%	14%
" " " bottom	8%	3½%	6%	15%
" " $\frac{1}{4}$ " 15%	12½%	12½%	31%	16%
" " " bottom	58½%	19%	19%	16%
#2 Series Above 6%	42%	8%	17%	15%
" " " bottom	44%	13%	16%	15½%
" " $\frac{1}{2}$ " 14%			2%	12½%
" " " bottom	14%	4%	13%	15%
" " $\frac{1}{4}$ " 15%	14%	12%	36%	16½%
" " " bottom	60%	20%	20%	15%

Grid experiment of falling ore retarded by inclined boards as:-

Board 6 feet long  
A 12" long  
B 3" space  
8 boards



Makes of  
16 boards  
60" high  
A 6"  
B 1"  
Angle 45°



At night made others for French engine, to oil both sides of crank pin at same time -

14 mesh sieve: Min. '020" each hole is '067" of around the wire occupy '280" holes '720"

Screen plates:- Hole '096" ½" thick



A = '091"  
B = '0945"  
C = '234"

Holes per sq. foot =

Hole '075" ½" thick

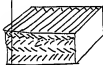
A = '080"  
B = '066"  
C = '144"

Holes per sq. foot = 9216.

Nov 19 1891. Ogden M.J. Designing best for feeding the dryer from 1½" Screens work to mesh stuff from here & return belt for same after drying to distribute it to the four belts under rolls - #1 will running today with 21 ¼% conc. #2 41.35% & Lashing 3 00%

Nov 1891.

Dryer: - Designing new dryer - Gasolene -  
about 5' 3" square & 32" deep -  
each supplied with 10 series of  
19 plates each 190 in each section  
each plate is 62" long 4" wide & 1/4"  
thick so that the ore travels in 19 streams  
each of which runs down it. Then drops 1 1/2"  
on to another and so on for 90 falls.



There will be 9 of these on top of one another  
with rollers feeds on top & the heat from  
a furnace below to dry the ore as it falls.

dry weight today 162 - 9 1/2 = 152 1/2 -

Nov 29 1891. Opaton N.J. - Dressing dryer sections: -  
No. 1. Took samples of ore from belt that runs under  
14 mesh screens - These screens have a circular  
hole .975" diam - There are 158 sq ft of 400 that have  
holes .996" diam - All are so stopped up with the ore  
that you cannot see through them and they have a  
bar on that I think prevents them from working properly.  
Of the total amount that is retorted 70 1/2 gross  
15.69% pass through 10 mesh 11.91% through 40 mesh  
2.88 " " 90 " 10.41 " 30 mesh  
1.95 " " 80 " 23.46 " 20 mesh  
1.13 " " 70 " 12.49 " 14 mesh  
1.78 " " 60 " 6.63 above that  
5.03 " " 50 " No ore was first above  
100 mesh & the rest 90 & the rest 50 & so on -  
81 1/2% is finer than 10 mesh.

Nov 29 1891. Opaton N.J. - Our cost for a 10 hour run  
seems to be about as follows: -

Running 600 tons at 25¢	\$150.00
Wile #1 10 hours	44.00
Wile #2 " "	22.00
Steam & Electric Labor	42.00
Coal, Oil & Waste	45.00
Office exp. etc.	20.00
Royalties 20¢ on 360 tons	72.00
Ore Wile Royalty 25¢ 360 tons	90.00
	<u>\$485.00</u>

Dec 1 1891 Opaton N.J.

Moisture in Ore: - 8 a.m. fine bright morning - Our  
finished product cakes perceptibly in hand: 22.000  
m.g. dried weight 19750. Moisture .0125%.  
Cost of ore. - Compared today with J. A. C. (Dec 3) on cost  
of producing one ton of ore 6 1/2% ore with all expenses  
and royalties at \$300 - profit \$47 per ton.

Dec 4 1891 Opaton N.J.

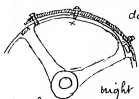
Cutken Ore: - The cost of Cutken ore delivered at Sparrow  
Plant appears to be, as near as we can figure: -

Mining, R.R. & Grading	\$2.25
Royalty, freight	50
Freight to Sp. P.	20.00
Blacks	10
Expenses of ore	10.7
Undergrading etc	26
	<u>\$40.25</u>

is it is a 60% or 1/2 bolt to them 9¢ per unit  
 One or at 1/2¢ per unit + 1/2¢ freight + 1/2¢  
 8¢ per unit  
 Running at Bradbrook pays for late Sept. ore 60%  
 + runs 4000 tons per day \$6.82 or 11.3¢ per unit.

Dec 12 1891 Open 4 1/2.

New Screens - We started the new screens in Mill 2 to-day but only ran a short time owing to screen bolts giving out.



Runners at Salem to - night to Edison - Kilders, Russell, Haines, Lewis, Ertter, Bird, Klein, myself, & many others there.

Dec 12 1891 Open 4 1/2.

New Screens - Started these again but found we could not run them without some alterations - We decided to put a steel bolt in middle of sides of screen, to hold them better - I got steel bolts in New York as also steel studs for corner bolts.

Dec 17 1891 Open 4 1/2.

New Screens - We ran all day with 4 screens; with middle studs holding the screen frames. 4 other studs not taken out - At the end of the day we had: -

1 bolt between 2 + 3 on #1  
 " " 3 + 4 " #2

A leak between 1 + 2 on #2  
 " " " 8 + 9 " #2  
 " " " 9 + 10 " #2  
 " " " 10 + end " #2

#3 + #4 screens were all OK. The total leak was about 1/10 of 1% at end of run we had lost corner bolts as follows: - 1 out 1" raw #1 screen, 1 out 2" raw #1 screen, 2 out 2" raw #2 screen, 2 out 10" raw #2 screen, 1 out 1" raw #3 screen, 2 out 10" raw #3 screen, 1 out 2" raw #4 screen, 2 out 10" raw #4 screen, 1 better stud broke. The output of these 4 screens was at the rate of 264 3/4 per min or 6.8 1/2 tons per hour.

I notice here that the bolts broken off are always at or near the end, never any in the middle & I think this is due to sag in middle of frame holder showing off heavier ends where we sag taken place -

The screening capacity is very small but we are taking off the pit that runs crossways as the screen frame as that the ore will roll more and therefore might we put them in #1.

Dec 14 1891 Open 4 1/2. Screens.

Today 1 + 2 screens have been fixed up & the leaks taken out #3 + 4 as they were as they had only lost 8 bolts each. Two bolts were also left out on #1 + #2 -

Rebinder's average of 8 tests gave 190 per minute for the 4 screens (highest 210)

Leakage for the day about 1/10 of 1%, on stopping we found that #1 had lost 4 bolts, #2 13 bolts, #3 5

both #4 & 6 SE. We now set about changing #1 screen plates for those which had no rid across.

Dec 9<sup>th</sup> 1891 (Open H.). Screens

#1 has new screens with no cross ribs, #2, 3 & 4 not changed. Capacity of 6 tests up to 11 a.m. show capacity as 236 lb per min. This alteration if put on them all would double the capacity of yesterday. Leakage today was 1 1/2% up to 10.30 a.m. when a large leak occurred on #2 screen; this was immediately fixed.

First found it practicable to break out the cross rib of screen frame whilst in place and this will be done Sunday.

#2 Screen will also get on Sunday two studs in rim of wheel for each screen instead of one, & the end studs will be taken out.

Screen brushes are being made that conform to outline of circle when put together. Also some are being made that are cut across to make them more flexible. Mallory is making some with weights on.

Dec 3<sup>rd</sup> 1891 (Open H.). At this date Mill #1 is about good for 1600 tons of ends more & will deliver 1 ton stockhouse whenever we run at about that rate of ends.

Mill #1 still wants the day or attachment.

Of the 480 new 90° slot screens it has only as yet got 108 of them. It has not yet got clutches

to enable the big crusher to be stopped without stopping the conveyors. It wants roller feed on the crushers. It wants new pulleys (18") put in place of the (28") to make French Engine run 165 Rev. We have as yet no roll lathe. The new exhaust pipe to French Engine (8") has been put in. The separator for steam pipe of Fr Engine has been put in.

Mill #2. Four screens are running but give as much trouble on account of sag that we are now fitting up the other 2 with trusses inside them. The screens do not seem to have the capacity although we have made alterations & put on weighted brushes. Only 2 1/2 tons per screen per hour has been got so far and we must have at least 4 tons. Otherwise hull works good & gives little trouble.

And as we close the year.

Jan 1<sup>st</sup> 1892 (Open H.). Started in to put the trusses in the 4 screens to keep them from sagging also to get out the day or parts; it is necessary to have these two things to get an idea of how much capacity we shall have in the 8 screens.

Mill #2 working all day 12 1/2 hours

Best machine 52 lb 21 min

Grng to Stockhouse from 4 separators 3.63 tons per hour. 4 screens (no weight on brushes) 8.9 tons per hour. #5 Separator was receiving 1.87 tons per



Le. Exp. by 4 Screens 6-46 lbs per hour - ore damp.  
Cur. #2 Starkhouse from 5 Sep 5:34 till per hr.

Run 9. Oryden N<sup>o</sup> 1.

#1 Mill	#2 Mill
35-54% Percent.	70-106%
3-12% Size	2-41%
66 1/8 m Run	15 1/2 10 min
6-15 m Mag. hr	926 3 m.

Grade 20-44 1/2%

Stops: - 8 for screen - 1 Afternoon on conveyor - 1 conveyor

Mill #1 Stop - Main pulley in Eng. room

10:5 - Sunday - Thomas got down #5 Screen

shaft to put a piece on end to take order for end bearing - #6 screen frame has run 6 hr without showing any sag -

Jan 12: Stopped Mill #2 owing to continued trouble with screens shall not run again until the dressed screens are up.

Starkhouse #2 Sample tested by Booth, Gares & Allen showed today 64-.076 dm - 10 1/2 lbs. This is very bad and we think it is due to the fine dust which does not separate by magnet and of course weighs in with. Consent. Kennedy would seem to be put in fans in Starkhouse, also not to have so much of a mesh finer than 50 in pistons, so that they are getting over 4000 again & makes fines dryer. - 3 Bros wanted - & 1/2 lb. here -

to screen has about 30 parts already on #4 & #5 screens are being put up.

High. Magnesium ore 0-012. - We have about 1000 ton of this

Our test are high owing to fine particles of dust clinging to the ore & the magnet in test room will not separate this - Magnetics test shows 69-86 Net. Iron

Look 3 lb. & dried - then washed it in a long battery jar with three pails of water. let it in to the bottom by a rubber tube & on constantly stirred

Before washing	3 lb.	69.86%
After	2 lb. 12 1/2 g	70.22%
" 6 pails "		70.95%

I was took some of the ore & run it through #4 & #8 belt machine

Before re-magnetizing	69.75%
After	70.59%

now I took 3 lb. of this & washed it in above battery

Before washing	3 lb.	70.59%
After	2 lb. 13 1/2 g	71.13%

Next - 3 lb. of dust that had settled on beam for 3 1/2 weeks in Starkhouse, washed in 10 pails of water

Before	3 lb.	
After	1 lb.	71.67%

Jan 17 1192. Oryden N<sup>o</sup> 1. Sample #4 was #2 Starkhouse material, carrying 0 1/2 lbs. This was run through belt machine again & delivered into Starkhouse where a brook takes dust away as it falls - A sample of this was sent to Booth, Gares & Allen



190 Jan 1972.

of Phila. to test & today we received back  
 Jan 66.066  
 M. 0.066

It was very damp on the 18<sup>th</sup> when we ran this  
 & since it has been very wet, but we have rigged  
 up a heater for it to come through & we have changed  
 a device for bringing it from the stockhouse & putting  
 it through heater, better machine, & returning it to the  
 stockhouse where a fan takes out remaining dust.

When we start this I think our ph. will be about  
 0.1045.

Screens: On this date we have #4 & #5 screens  
 finished, #3 & #8 are having the plates clipped.  
 #2 is being stripped, #1 the screens are off & ready  
 to start on, #7 & #5 shaft has to be lengthened & 2 wheels  
 to be patched.

Dryer: - 3 boxes in place, 2 wires are true good & it  
 heat up, 2 more are finished, round angle chucks  
 for the other two - Men are putting timbers together  
 for support of beams - Frame work for runway is  
 up but not hoisted in - Has been so hot for 8  
 days that very little outside work can be done.

Jan 21 1972. Opden h.f. Set in #2 stock house on &  
 changes made to improve it  
 Jan 6 #2 S.H. oil mag. tar 69.86%

B.G. & Blain { 64.576 vint  
 0.472 M.

Jan 7 Increased glass Jan in Sp. 60%:-

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Ashore Cno. 70.21 Tails 1.91  
 After " 70.48 " 2.51  
 Not Satisfactory Jan & take dust out between #2 S.H. &  
 Separator 1710 K.R.

Sample 573.9.75. Jan 64.835  
 Ph. 0.062

Jan reduced to 900 & 5 two screen through the  
 sp. Sample 573.9.73. Mag. 70.59  
 Jan 66.106  
 Ph. 0.066

Jan 22 1972 Opden h.f. Have run about 1/2 the ore  
 from #2 S.H. back through the mill & into the furnace out  
 of S.H. again -

#3, 4, 6, 7 & 8 Screens out of my hands entirely -  
 Runways for bps of dryer being covered in -  
 Ordered 100 screens from Fraser & Chalmers 60  
 mesh; they must be 0.011" after running -

Blair: - I notice that the dust is shaken out in  
 clouds when the delivery is being  
 made in S.H. #2 by falling down a  
 board they have placed there; very  
 objectionable like a wall of perfection  
 brings out lot's - The fan is doing  
 good work there



Jan 24 1972. Hunt/Jan. Frank was down this morning  
 & he says the proportion of wood cut on S.H. mine is  
 10 ft. trees, 6 1/2 cords wood, 1/2 fence post, & 1/6 poles.



At 2.30 made here they weighed 85 lbs at 3.30. Have  
 left the pattern to 20 lb. Taylor costs them for 85 lb  
 with 3 patterns he is to give us about 25 per day starting  
 about Monday

Dryer 1 - All boxes up, distributors being fitted on -  
 Belting & runways are almost finished - 1/2 screen  
 are about half done

Dryer 2 - All finished & carpenters putting finishing  
 touches on - Trust guards for bottom beddings being  
 made -

0.852<sup>1</sup> lb ore in #2 S.H. has not been disposed of by  
 Genl. Last subscription has been paid to bring  
 Capital to \$450,000

Edison General Stroke: - Gave up 91 to 99 last  
 week - Lack of Looms going into the directory  
 & Willard retiring - It seems to be general conver-  
 sion that they will increase capital after statement  
 is out - This will run down the stock, and it is  
 supposed it is being run up by atom change &  
 these people are selling to keep their share of the in-  
 crease at a probably lower rate -

Feb 6 1892 New York.

Ed. Gen. Stock Co: - movement in favor of consolida-  
 tion with Thompson-Houston - \$75,000,000 Cap.  
 S.H. 175,000,000 B. Gen. A 175,000,000, Ducommun  
 1,000,000 - Ed. Gen. Stock par for par - S.H. Mfg.  
 for new Co par for par that it be 25 lb. S.H. common  
 par 25 qts '60 new stock, S.H. the price to be

Genl. Of the 500,000.00 not more than 20% can be  
 sold.

Feb. 8 1892. 11.30 a.m. Open H. Well #2 ran a shot  
 this today to winter up - All ready to start now  
 except we are waiting for brushes for these screens.  
 Well #1 Dryer all O.K. but the millwrights have not  
 quite finished off the belting, runways & motions -  
 3 of the 1 1/2" screens are altered & the other is finishing  
 Well #2 has now a 5' fan that pulls air out of the  
 boxes under screens and forces it through the separator  
 box & out into tailings box - Separator tailings  
 box has also now 3 or 4 fans that pull air out of  
 all and keep it clearer -

Feb 10 1892. Open H. - I took a bottle of #1 S.H.  
 material as it was leaving Well #2 found

64% acid through 50 mesh dot screen.

24% " " " 100 " wire

Took some material from Well #2, passed it through  
 0.096" dot screen found: -

11 1/2% would go through 50 mesh dot screen -

4 1/2% " " " 100 " wire

Made a separation at 50 mesh of both with hand  
 magnet & found the S.H. material was much  
 browner than the other

This shows that a great deal of dust and consequent by  
 high Sh. has got in in Well #2 & when well this  
 when once in the separator cannot be taken off from





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Feb 1892

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28. Recently there has been "bitter rivalry" between the companies, and prices have been cut so that the "cheap little profit in the manufacture of the 'cheap' machinery" for anybody. The consolidation of the two companies will give "the added advantage that a large concern has over a small one. It will give a larger working capital. It will do away with a competition which has become so sharp that the product of the factories

"There has been no monopoly, for there is no limit to the stock of securities available. We do not know that there will be any increase in prices, but there should be an increase of 3 or 4 per cent in the profits by the simple advantage of placing all of the interests under one management."

"There has been no apprehension as to Mr. Villard's relations to the company," said Mr. Gould of the consolidated company.

Mr. Edmond says that in addition to his financial interests in the Edmond General, which had been simply protected in the consolidation, he was in a position to acquire shares which he now controlled and which were no part of the general company's holdings. One of those was a General Company at Odessa. From the fact of his ownership of that company, he is able to draw conclusions which have arisen. With considerable care, Edmond is able to speak of those facts which are developed in the

"I cannot waste my time," he said. "Over  
electrifying matters. For they are old,  
second to worry over those things ten years ago,  
and I have to take care of new material on  
which to work. My first light is at 6:30  
old for me. I simply want to get as large a  
dunder as possible from each stick as I hold. I  
am not business man enough to spend my time  
at that end and not to get on. I think I was the  
first to urge the consolidation."

Mr. Johnson was asked about the alleged  
strained relations between himself and Samuel  
J. Isaac, who has been the General Manager of

"There is nothing in that story," he said. "Mr. Insull was once my private secretary. I crossed the line for him a long time ago. I expect he will come with me to La Jolla. His resignation has been accepted. He is a considerable man, and he knows my affairs so well we will get on just as well without him. The Edison General Company was formed that they could not do without him very well."

"What will be the effect of the consolidation of the suits now pending between the Insull Foundation and the Edison Companies?" Mr. Edison was asked.

"I think there are forty or fifty suits in which the Edison Companies are defendants."

the companies are interested," Mr. Edison answered. "I do not suppose the consideration will result in stopping the litigation. In many papers in the case I am involved which will govern the principles over patent rights, &c., with the Westinghouse Company. I suppose those suits will be carried to a decision."

Cannot get, or rather we do not  
of the ore above about 2500 tons

the belts that receive it are in  
yet, & consequently we cannot  
management take advantage of  
high temperatures has a capa

Ordens 4-1-

new dryer with dis-  
tributer motions mak-  
ing, top 160 Kev or 320  
vibrations + bottom 40

or 80 vibrations -  
This makes a much  
better distribution than  
been running on over  
2% wet all afternoon  
on 2 sets rolls without

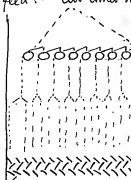
showing any signs of  
logging - It raised  
the #1 Concentrate to about  
10% with  $1\frac{1}{2}\%$  tails

Have designed to put

out of all proportion to its increase — Am. making  
arrangements to use air at 600° Fahr. ....

4<sup>th</sup>. Order N. f.

this week and in consequence we have decided to alter the distributor for dryer and put on a roller feed :- Air comes in as below at 570° Fahr. and is



Hot air

Siemens & Halske:- The  
Lithone M<sup>rs</sup> says that  
Siemens and Halske of  
Berlin are about to locate  
in the U.S.

202 Dec. 1892

8<sup>th</sup> Opten H. J. Last of ore going into Stock #2  
for size 1/2 -

Gravel through 100 mesh	342.75 gr.	15.17%
" " 90 "	101.80	4.6
" " 80 "	80.70	3.4
" " 70 "	287.30	12.72
" " 60 "	119.30	5.28
" " 50 "	341.90	15.13
" " 40 "	462.75	20.04
" " 30 "	464.06	20.54
" " 20 "	61.22	2.71
Atre	2.02	.18
	<u>2250.02 gr.</u>	<u>99.94%</u>

9. Opten H. J. Signs of mine mud seen at  
Recent in testing room at Opten

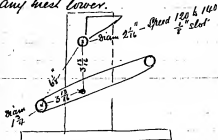
Mesh	Mass	no. of pieces	Weight	Significance
5	.034	4 1/2	5	4.87
10	.028	9 1/2	10	9.75
20	.020			14
30	.016	17	20	18.5
40	.012	25	30	29
	.010		40	
	.012	20		
	.010			
50	.009	46	49	47.4
60	.008 1/2	57	58	57.4
70	.007 1/2	62	58	56
80	.007 1/2	77	68	72 1/2
90	.005 1/2	83	89	86
100	.004 1/2			95

Note Discrepancies -

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10. Opten H. J. After alterations going on  
Mills #2 averaging about \$6 tons per day.  
Opten been here a week. He is working up a new  
method of screening or sizing by belt. Also a  
process for washing ore concentrates to reduce  
mercurous and be able to make ore of any  
special grade.

Ore sizer - Mch 10 1892  
His machine was tried at Opten H. J.  
on Mch. 7, 1892 for sizing down to 50 in  
any mesh lower.



Belt must be a thin one - pass roller  
Ore drops 3 1/2" on to belt.

From this experimental machine, which  
would do actual work at a low output,  
we infer that a belt 4 feet wide, with  
dry ore will do 2500 # 50 mesh per hour.

This machine sized to 50 mesh better  
than our 50 mesh screens.

Of the test of Mch 8<sup>th</sup> (see 10<sup>th</sup>) we took all the  
ore that passed through 100 mesh and put in  
a bottle with water and continued shaking

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for over an hour, cutting the several times, & adding fresh. The exp.

shows that to clean the ore long continued, powerful agitation is requisite. The water was finally filtered from the ore & it was dried in a pan over the fire. I found after drying that something could be separated from it by the assay magnet.

30.405 wgt. Iron

Washed sample N<sup>o</sup> 1 A. is the other in two parts & one sent to B. G. & B. of Phil<sup>a</sup>. & the other to Hunt & Clepp Pittsburg; for Iron & Mn.

N<sup>o</sup> 1 A.  
B. G. & B. Iron. 68.33 Sh. 0.029 Gr 4<sup>th</sup>  
H. & B. " 68.56 " 0.041 Gr 9<sup>th</sup>

Loss by washing of Opten Concentrate: -  
Took 300 grms. Concent. 67% Iron & washed it well in a shaking bottle. It weighed 166% less but as we must have lost some iron we believe it was about 14%.

Took 300 grms. same ore and ground it all to 100 mesh (60 hours and 1/2 hrs) then washed it fairly

Major-General Grant's Memorial has been dedicated at the University of the Pacific, San Francisco, California, on the 10th inst. The ceremony was attended by the President of the University, the Mayor of San Francisco, and the Governor of California. The Memorial is a fine example of the art of the sculptor, and is a fitting tribute to the memory of the great General.

From San Francisco -  
Feb 2 1892

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well. The wash water was poured in small lots and saved, the iron in wash water settled & was saved. Amount of weight lost was 34%.

We think there is no doubt we can wash out all with proper machinery.

100 mesh (6 1/2 hours) Opten Concentrate. Gave some a dozen shakes with water in a bottle and emptied the water on a filter, saving the mud which was dried and weighed.

A second charge of water was put on the ore & 24 shakes given it & the mud filtered off and weighed. The first washing had 86% of the total mud of the two washings.

Samples of Washed Ore at Opten N. 1.

#2 A. 67% Concent. nothing but 60 mesh 8 1/2 hours  
hats wire mesh. Cambr<sup>o</sup>  
B. G. & B. Iron 67.33 Sh. 0.032 Gr 4<sup>th</sup>  
H. & B. " 67.23 " 0.039 " 9  
#3 A. 67% Concent. 40 mesh. 100 hats wire screen  
B. G. & B. Iron 67.26 Sh. 0.035 Gr 4<sup>th</sup>  
H. & B. " 68.36 " 0.030 " 9<sup>th</sup>  
#4 A. 67% Concent. 40 mesh. 100 hats wire screen  
B. G. & B. Iron 66.296 Sh. 0.038 Gr 4<sup>th</sup>  
H. & B. " 66.61 " 0.044 " 9  
#5 A. 67% Concent. 30 mesh. 200 hats wire screen  
B. G. & B. Iron 66.865 Sh. 0.033 Gr 4<sup>th</sup>  
H. & B. " 67.12 " 0.039 " 9<sup>th</sup>  
#6 A. 67% Concent. 20 mesh. 200 hats wire screen



13.9.10. Am. 63.15. H. . . . 0.058 QM. 4.  
 H.C. " 63.01 " 0.067 " 9

28<sup>th</sup> Octen H. Report - Set shows run

	P.M.	T.M.					Reason
		2	3	4	5	6	
Temperature		14.5	14	14	14.5	14.5	
" " Coming out		7	7	7	7	7	
" " Hot Water		8	8	8	8	8	
Drift air per min	440	1500	1500	1500	1500	1500	
Loss per hour	14	15.5	21.5	24.5	24.5	24.5	
Temperature		92	92	92	92	92	
Water at 7		940	910	900	880	780	
at Exhaust		160	147	167	126	104	
of Ore from dryer		127	136	166	116	118	
at A		130	121	141	107	104	
at B		109	115	127	112	106	
at C		201	172	303	122	230	
at D		210	270	280	260	260	
at E		274	156	271	180	170	
at F		150	220	150	130		
at G		135	176	136	122		

See #5 Memo-  
gram calculations  
run & from  
revolution, etc  
figure the tick's  
part of air.

On Wed. 20<sup>th</sup> I telephoned to Behan as follows:-

Dryer working but we are limited to 2 1/2% moisture, where heat comes in it is at least 1000° F but when ore running the temp. anywhere in box 2 feet above is not over 280° - the box below is hotter than one above - My calculations show that we have ample

sufficient heat units even if we turned it into steam hot I'm afraid we don't apply it right. We put in the heat at 1000° and it follows up the ore and burns its dryer when there is the greatest possible difference in temp. between the incoming ore and the outgoing air - Now if we put in the heat ten times higher, that is just under the red rolls and take it out about 6 boxes lower the hot air strikes the cold ore and goes with it and heats up the particles to about 200° when the air goes out carrying all the moisture as there is no difference of temperature between the ore and the moisture of air and water - Can run as we are until we do this & can fix to do it as we shall not have to stop -

He answered:- My impression is that if you work the blower down so far it will suck two of ore out, that is to say a large quantity of ore will be sucked out, whereas now it gets so far down before it is dry that the blower can't raise it up.

So I understand that the air going through the exhaust is 280° and that the air from the pipe is 1000°? If so you have utilized about all the heat that it is possible to get and the only remedy must be a larger sized fan; doubling the size of blower will permit of doubling the amount of moisture in the ore as you double the heat units per sec. It looks to me as if present arrangement is all right & what is required is larger blower - With a big enough blower the temp. of the exhaust could be raised to any degree notwithstanding the cold ore - You

Wed 11/92

do not say how many thin, per hour, of  $2\frac{1}{2}$  L/min pass + whether it stops - Give me temp. of air just as it enters flask. Oh

30% Meq. At Edison Laboratory today at Newark. I saw some briquettes of ore he had made with about 8% work of resin per ton. 'Res' looks fine!

4 April. Report of test made Nov 10<sup>th</sup> for the removal of Ph. by Acids:- The following samples made from Optus concentrate 64% iron 586 Ph. all ground to 100 mesh (500% was secured), the object being to see what amount of Ph. can be removed by acids under various conditions

Sample 1 B.

100 grams washed 100 mesh  
0.500 gm. Hypochloric Acid

Now diluted just sufficient to cover the ore in a 2 1/2 diam. bottle + put to react 24 hours, after this the bottle filled with water stirred + poured off 4 times. At the last time the water stayed on for 2 hours then the ore dried

Resid. Quies. Water 68.496 dm 0.024 Ph  
Hunt + Elapp. 69.11 " 0.032 "

#2 B. Same as 1 B but 1 gram instead of 50 gramm. of acid

B. G. + B. 68.496 dm 0.024 Ph  
A + C. 69.11 " 0.032 "

Thu 11/92

#3 B. Same as 1 B 50 gramm acid but amount of water increased in bulk to the bulk of ore

B. G. + B. 68.330 dm 0.023 Ph  
A + C. 69.06 " 0.024 "

#4 B. Same as 3 B but 1 gram Hypochloric

B. G. + B. 69.576 dm 0.026 Ph  
A + C. 69.84 " 0.026 "

#5 B. 100 gramm. <sup>equally</sup> 500 mg. Sulphuric Acid just enough water to cover + worked as 1 B

B. G. + B. 68.529 dm 0.024 Ph  
A + C. 69.12 " 0.022 "

#6 B. 100 gram washed ore 1 gram Sulph. Acid just enough water to cover + worked as 1 B

B. G. + B. 68.576 dm 0.018 Ph  
A + C. 69.64 " 0.017 "

#7 B. Same as 5 B except water equal in bulk to ore

B. G. + B. 68.576 dm 0.026 Ph  
A + C. 69.18 " 0.026 "

#8 B. Same as 7 B except 1 gram Sulph. Acid

B. G. + B. 68.663 dm 0.021 Ph  
A + C. 68.87 " 0.024 "

#9 B. 100 gram washed 100 mesh 500 mg. Hydroch.

210 Apr 11/72

Raid, water to reach  $\frac{1}{2}$ " above ore, took 24 hours.  
 B.G. + B. 68.663 dm 0.028 pl

#10 B. 100 gms wood, 100 mud. 500 mg HCl, water  
 to reach  $\frac{1}{2}$ " above ore + took 28 hours  
 B.G. + B. 68.596 dm 0.026 pl  
 H + B 68.31 " 0.082 "

#11 B Same as 10 B soaked  $\frac{1}{2}$  hours  
 B.G. + B. 68.663 dm 0.026 pl  
 H + B 68.10 " 0.085 "

#12 B. Same soaked 96 hours.  
 B.G. + B. 68.696 dm 0.024 pl  
 H + B 68.20 " 0.034 "

Expt 1 - We have taken one of our blowers from the top & put it underneath the fire. It now not seem to have a surplus of heat. It get about 1100°F in stack & also at surface in the bottom to keep the ore so it comes out at 220° - Or not above 2% moisture but we can take care of any quantity that the mill gives us

10 Apr. Opden H. J. Blinn come up today and explained to us what he wanted for brick-making. As Thomas' arm is not well yet I volunteered to design it. The press is.

1. Mixing in a machine with a rammer of Soda

211

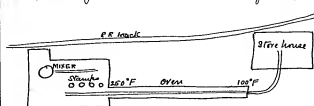
(which we also have to make)

2. Pressing in a mould with three strokes of a stamp with

3. Putting into a clay oven at about 250°F. & keeping there for about 2 hours.

4. Stacking up for shipment

15<sup>th</sup> Apr. Opden H. J. Brick-making Apparatus. We have general plans now and are laying out ground.



19 Apr. Opden H. J. Laid out building for brick-making apparatus and saw digging post holes and filling in etc.

20 Apr. Opden H. J. All part in ground for new brick-making building and stone laid for corner of large part of building & tunnel. Thomas found gears for mixer and large pot stove (in Newark N.J.) for heating tunnel

Expt 1 - running all day. It takes care of about 3 1/2% water + 40 tons per hour besides drying the rest of the ore so that the ore going into #1 Stack is under 2% water - The press (2 strokes)

212 Oct 1892

on the cut out badly & we must replace these in the fall by a large flat fan which will take it out slowly & in large volume.

Cow selling about 60 tons per day and the average for the week up to Friday is 91 tons with a maximum of 150 & minimum of 28 tons.

22 Oct. Weight - dry weight Nov 23 1891.  
162 - 9 1/2 = 152 1/2 lbs.

Opten H. Ground all ready for brick building, all post set, foundations for mixer in and 50 feet foundation in for heating tunnel. Start with 18 carpenters to be here Monday - All the 8 x 8 timbers for sill on ground also a great deal of other stuff.

26 Oct. Opten H. Piece of Ore: -  
Have writing to Perry says that he is advised that William Rubio's estimate on assaying as follows for different charges.

55-120 lbs 2m	0.008 lb
55-220 " "	0.009 "
55-750 " "	0.009 "
55-000 " "	0.009 "

Can be bought today (Oct 16) at 5.85 per ton f.o.b.  
Wish 1/2 per unit -

Lewis who used to talk with the Lamp Co came up on 5 p.m train to talk to me about putting money

Oct 1892 213

into some scheme in Fortuna California - He went back in some train as I told him I could not entertain any proposition for immediate return where I could not see it everyday if I wanted to -

Brick building: - At present we have got no carpenters as yet on the new brick building - We have the mixer all framed together and a large part of the tunnel built - Annually expect 10 or 12 carpenters tomorrow.

3<sup>rd</sup> day. Opten H. New brick building almost finished - Mixer timbers all up - Timbers for stamps here & to be put up tomorrow - Tunnel not quite finished - Runway from stockhouse being put up.

Screens: - Experiments with the screens show that by putting weight on for 5 sec & off 25 sec. very much more can be screened because the screen is entirely freed about once in a half minute; this gives us lots of capacity and it will not be necessary just at this moment to make the other belt screen.

Other pulleys: - I am making up now a lot of other pulleys & head & tail pulleys, after the pattern I designed for cheapness; these spoke wheels and wood on the periphery turned up.

Opten Gen. Ede. Co: - I hear the new board of directors

214 May 1892

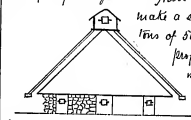
in h. b. (that is for the Gen. Elect. Co.)  
Ames, Conledge, Steppmann, Coffin, Capt. Griffin,  
J. P. Morgan, J. D. E. C. Carter, D. C. Miller, & J.  
M. Kennedy.

General Electric Co.:- Syndicate to guarantee \$500,000  
bonds. I took \$20,000 interest.

Electric Light Co. of N. Y.:- I have taken \$25,000  
interest in the syndicate.

Johnson Standardizing Co.:- I was offered today an  
interest in a loan to be made to this co. of \$20,000  
at 6% for 6 months on security of \$300,000 par value  
of Interior Conduit Co. stock - the loaner having  
the right to take up stock at any time - I did  
not take it - Object:- development of dynamo  
and motor of G. N. Johnson for R. R. work.

10 May. Capten H. J.



bell's under walk.

new brickling plant almost ready to start.

Have surveyed the ground to  
make a storehouse #3 for 25000  
tons of 50 mesh concentrate - We  
perhaps build it so that it  
is nothing more than a  
roof with a bell way  
in top and deliver

May 1892 215

Local expense at Capten H. J. for April  
Mile & General Expense. \$22.252.58  
Royalties on mine 1.157.92  
" " Land 1.069.92  
\$25,040.52

Edison General Co.:- I signed <sup>papers</sup> bond for \$50,000 bonds  
Monday the 9<sup>th</sup>. Edison General Trust is  
accepts sold today at 112 1/2 (May 11<sup>th</sup>).

11<sup>th</sup> May. Capten H. J. Dr. 1891- We have no trouble  
with blower now - We have had no trouble since  
about April 11<sup>th</sup>.  
Reason:- Price 1/40 per lb. of 280 lb.

16<sup>th</sup> May. Capten H. J. Bricked Ore:- Made first  
bricks today. Weight about 48 lbs. size 8" x 8"  
and circular



May 21. Capten H. J. Bricking:- Telephone Batcher  
to Edison:- Find we have only about 1/2 of the weight  
we ought to have for 8" x 8" brick - Am putting on  
330<sup>th</sup> more - Small mould made at laboratory  
makes splendid brick with three blows and then  
bakes at an ordinary temperature to hard brick in  
two hours easy - Ours never hard all through  
even if left in all night, although outside very  
hard - Too much heat does not do as it

makes them come out brown. Am trying large brick with an inch washer in middle of mould so that they come out as ten cakes  $3\frac{1}{2}$ " thick each. Great thing is however more pressure per sq. inch - blower works very well at 65% comp & 70 in.

Ordian to Matchelers - How would it do to increase hole from  $1\frac{1}{2}$ " x  $2\frac{1}{2}$ " x 3" then increase pressure so that it is equal per sq. inch to small mould. It seems to me that if the big brick is made so that the heat does not have to penetrate deeper than the small brick and the pressure per sq. inch is made same it will be O.K.

Round bricks are better for blast furnace. Could you not manage to make a mould for 4 small bricks in one mould at once, increasing the pressure accordingly - Counting material cost for 250 lbs. so the saving from 80 to 65% is a big item.

If greater pressure or better mixing will permit 60% to be used, it will be a big item in a year.

20<sup>th</sup> May, Ogden N.J. Telephone Matchelers to Osium - What you suggest is O.K. but I cannot increase weight to take care of large mould, I would want 2400 lb. With a 3" hole it has still 43" surface whilst small mould has only 16" - With my 330° secta & 3" more drop I can take care of 25 or 26". Can make a block 5" x 5" x 8" without hole, worth weight about 2400 - Am trying 3" hole in present mould - One of small bricks was just as hard as the rest although it had not been in oven at all.

it had simply on a piece of sheet iron on the sand over the old night. Have not attempted today am putting up one of old rolls as an anvil.

Brickings:- I find that the 3" hole in large mould, as also the making of gates instead of 5" cylinders are neither of them any good, they don't dry inside; the hole seems to be no good. I think it would be if they could be set up so that the air blew through them.

8<sup>th</sup> June Ogden N.J. - Osium & I have been to Andersen's & seen the brick-making machines of the Bligh & Millstone Coal Co (not in use) Yale has been to Mahanoy City & have seen one running belonging to the Reading Anthracite Pressed Fuel Co. We have bought the Andersen machines & Jim all is now taking them down & shipping them here.

11 June Ogden N.J.  
Brickling plant:- Oven fire bricked & fan exhausting at other end - I think with good fire we can get a row through in 20 min.  
Blackhawk #3. Foundations almost done. Sawmill cutting roof timbers.  
Shipments:- June 140 tons per day  
Screening:- Has been very much increased, screens have been supplied with the new device for pulling

218 June 1892

on brushes with weight + lifting up again; and all have been increased - Result about 28 or 29 from all.

Table broken:- The short cable broke at Option + we figured up the cost of it if it could not be repaired - It had carried 65,000 tons + we figured it was 1 1/2¢ per ton - Cooper Hewitt's men know or spliced it again, taking the two ends and pulling them together in the middle.

Chicago Ed. Co:- Insull has accepted the Pres<sup>y</sup> of this Co + gone to Chicago about 2 weeks ago - I think a very wise move for him -

Magnesium, Rust:- Increase of magnesium by charging a field from its own current. - Hds's paper, Manchester Literary Soc. 1878. 20 Eng. Mech. Aug 5 1878 - Also letter of Murray to the Engineer July 20 1866

219

# A FAREWELL BANQUET TO MR. SAMUEL INSULL.

At Delmonico's this city, on Friday, June 24, a farewell banquet was given to Mr. Samuel Insull by a number of his friends on the occasion of his leaving New York to take up the duties of president of the Chicago Edison Co. Submitted is a list of those subscribing to the banquet:

Thomas A. Edison, C. C. Conner, C. A. Spofford, J. H. Her-  
rick, J. C. Thompson, R. B. Rowan, John Kinsel, John Muir, F.  
C. Martin, R. E. Nelson, J. R. Bell, A. Amigo, John S. Wiles, C.  
D. Smith, G. H. Carter, W. P. Hill, F. A. Stevenson, E. H. John-  
son, H. Ward Leonard, C. C. Hughes, R. H. Lewis, C. L. Edger-  
son, D. Groves, W. H. Ferry, A. Thomas, J. P. Orl, G. W. Thompson,  
C. H. Brown, J. H. Berry, G. M. Frazier, F. R. Union, Chas. Hatch-  
ett, C. A. H. Berry, A. E. Kennedy, Eugene Griffin,  
John J. Jones, J. P. Kelly, P. P. Fife, Chas. R. Lloyd, J. Hunt-  
man, F. E. Langley, R. McDonald, Geo. H. Ross, E. Clark, H.  
L. Browner.

Many all the above were present. Major Bierburne Eaton  
officiated most gracefully as toastmaster, and speeches of unusual  
weight and felicity were made by Messrs. J. B. Wier, S. Insull, C. A.  
Coffin, Eugene Griffin, John L. Dege, E. H. Johnson, C. L.  
Edger, H. Lewis, J. P. Orl. During the evening a solid silver  
punch bowl was presented to Mr. Insull. The occasion was  
interesting for many reasons, and emphasized the fact that Mr. In-  
sull's eleven years of close association with Mr. Edison had covered  
a period of unparalleled industrial development in the  
electrical field. Although very much anxious to inaugurate and  
carry out even of the best, Mr. Edison was present to do honor to  
one who had served him so long, so loyally and so brilliantly.  
Altogether the dinner was a great success, and the arrangements  
with which all the arrangements were carried out was due to the  
executive ability of Messrs. Dean Greene and Kaplan.

Mr. Insull leaves New York for Chicago on June 29, and will  
at once enter upon his new work.

[ITEM FOUND IN BOOK]

Siemens & Halske Berlin  
Charakteristisches Bild



Lichtbogen bei 20000 Volt.  
(Wechselstrom)  
 $\frac{1}{2}$  der natürlichen Grösse.



37:

months with Kennedy, Joe Foye  
Thippel - now he has  
Thasenden in it all time in  
Room 4.

170:

Exh at Opleu - on a base of  
4 tons to 7 lb concentrate -

Mining	30	-	120
Milling	10		40
Refining			10
Royalties			50
Wear & Tear			10
68 1/2 Cwt.			238
At Bethlehem			82
			314

Cuba Ops. =

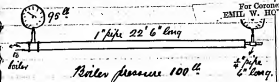
Mining	125
Freight	200
Milling	25
Refining	10
Subj	425

At Bethlehem 62  
59%

# Experiments

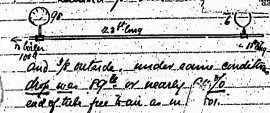
July 29/1913

501. Exp of pressure in pipe.



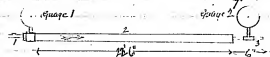
The small 1" pipe was blowing out  
for 6 lbs air  
Exp of pressure 80° or 82° for out.

502. Same exp. but a brass tube sub-  
stituted for iron & air 1 1/2 lbs.



[ITEM FOUND IN BOOK]

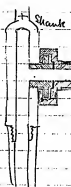
500 Shot of pressure in Steam pipes Aug 1<sup>st</sup> 1893



Feet from Gauge 1	140	125	110	90	70		
1	$\frac{1}{2}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ "		
2	$\frac{1}{2}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ "		
3	$\frac{1}{2}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ "		
Gauge 1	134	119	108	88	64		
2	100	97	84	66	52		

504

Steam  
of shell  
at this hole



Joint to be in  
to the hollow tube  
for cleaning

Aug 1<sup>st</sup> 1893

506 Drop of pressure in steam pipe Aug 2, 1893

Gauge 1		2		3	
1		2		3	
Barometer	140	125	110	90	70
Pipe	1	121	106	86	66
	2	121	106	86	66
	3	121	106	86	66
Gauge	1	136	123	110	97
	2	70	67	54	44
End of run - 200 ft					

506. Drop of pressure in steam pipe Aug 4, 1893  
 Pipe same as in 503 but  $\frac{3}{4}$ " of 2"

3/4" pipe		2"		3"	
1		2		3	
Barometer	140	125	110	90	70
Pipe	1	121	106	86	66
	2	121	106	86	66
	3	121	106	86	66
Gauge	1	136	123	110	97
	2	70	67	54	44
End of run - 200 ft					

The figures with the lines under are the pressures on the gauges on the preceding experiment when a small brass nipple with a  $\frac{1}{4}$ " hole is put in end of pipe

50%

Exp. of Pressure in Pipe Aug. 8<sup>th</sup> 1893  
Compressed Air

Compressor	Comp. Nipple	Gauge 1	2	Bar.
1" pipe	Exchange	75	60	15%
$\frac{1}{2}$ " "		77	58	31%
$\frac{3}{4}$ " "		75	42	44%
$\frac{1}{4}$ " "		76	11	86%
$\frac{1}{4}$ " pipe with 2" nipple		80	34	57%
$\frac{1}{4}$ " brass tube		82	20	70%

50%

Aug 8 1893

If I use for drill rod a  $1\frac{1}{4}$ " Oct Bar and cut out a groove for a  $\frac{3}{8}$ " outside copper tube the section of steel left will drill for greater than that of  $1\frac{1}{2}$ " bar as



2184 &amp; 1912

[ITEM FOUND IN BOOK]

509

Record of holes drilled -

Aug 11 1893

Explanation of these figures -

	1	2	3	4	5	6	7	8
<i>DATE 1893</i>	Aug 11	12	13	14	15			
<i>digging over wall</i>	18	17	20	40	24	14	16	
<i>digging ready</i>	10	7	7	8	7	10	5	
<i>Drilling #1</i>	2	12	8 1/2	4 1/2	3	4	8	6
	3	18	9	4	5	6	7	5
	4	11	7	6	5	6	6	4
	5	11 1/2	15	9	8	6	13	4
	6	12	10	9	6	7	10	9
	7	9	10	9	7	8	9	5
	8	7	7	11	14	6	10	7
<i>Churning drills</i>	26							
<i>Churning holes</i>	46	72 1/2	63 1/2		57	71	44	
<i>Spuds for rock</i>		1/2	2					
<i>Repairs</i>				15	13	40	18	
<i>Number Churns</i>					13	14	14	89
<i>Time taken each</i>	191	148	125	151	187	144		
<i>Time for drills</i>	34							
<i>Depth of hole</i>	19	19	19	19	19	19	19	
<i>Total time</i>	225	168	143	230	151	156	144	
<i>Actual time</i>	90	72 1/2			58	73	44	
<i>"clear" churning</i>	72				14 1/2	16 1/2		
					15 1/2	17 1/2	16 1/2	

\*1 Hole - drilled in ordinary manner  
just as they have always drilled but in  
rock near old duper - planned by the  
old method of chamber and a waste  
valve in bottom -

\*2. Drilled in left rock weather worn  
on top of west bank of #2 cut.

\*3. Hole 5 feet away from 2. Cleaned  
between every drill and steam +  
also in between 15 times in all  
steam being supplied by a branch  
from drill + connected to pipe at  
down along side drill by a joint  
like #504

\*4. & 22 - Now drilled on top of Cyllof  
on West side where rock was just  
soft + made much mud - Steam  
pressure was 90 lb from boiler on top  
of hill - Used 8 inch + cleaned  
about 13 or 14 times with very long  
+ has short cleaner pipes, the drill  
man making suggestion each time  
for cleaning - Top drill man  
has a float about 6 ft long to wall

[ITEM FOUND IN BOOK]

on and a secret kept tube in hypodermic  
ke work.  
The average time of last two drops was:  
94 to 100 feet per day of 10 h<sup>rs</sup>.



510

Aug 16<sup>th</sup> 1893

cleaning holes in rock cherting  
 and keeping the hole full of water  
 but the first chert stick - the column  
 of water may pack the sand round  
 the chert just above the wings

511

After hole #22 we picked up the  
 Chertman for a considerable  
 distance away 500-120 lbs -  
 We also made a tripod to hold  
 the cleaning tube with a  
 rope & pulley to raise & lower  
 it - We made the connection  
 permanent on cleaning  
 tube & always have one  
 length



[ITEM FOUND IN BOOK]

\* Had to clean away a lot of stones

	8	9	10	11	12	13	14	15	16	17	18
<i>Bole</i>											
Shooting down passing heavy	20	10	17	17	20	27	30	31	12	11	
<i>Bole</i>	4	6	3	5	5	5	6	7	4	5	
	2	8	6	7	7	4	6	5	4	5	
	3	3	5	7	7	6	8	7	5	3	
	4	8	9	6	4	8	4	9	5	7	
	5	6	5	5	5	9	5	4	8	6	
	6	6	17	8	8	10	6	4	6	8	
	7	6	17	8	11	8	11	4	8	6	
	8	5	18	6	10	19	5	6	6	8	
Shooting down 17 down	52	53	53	53	51	66	33	36	34	30	
18 down	13	14	10	13	14	10	9	12	11	11	
19 down	100	126	97	91	115	123	83	100	81	81	
<i>Bole</i>	19										
Total Time	121	135	100	108	150	162	116	144	91	91	
Adjusted total	70	82	48	54	59	50	44	47	47	44	
Left And Back to Chica											
Waiting time	100										

*Aug 16 1943*  
955 ft

*Photo*

*Aug. 17 1943*  
844 ft

*Photo*

[ITEM FOUND IN BOOK]

	19	20	21	22
Rate	18	"	"	"
Shipping Station	13	14	20	
Washing	1	5	4	6
	2	5	4	7
	3	6	5	4
	4	5	4	4
	5	7	7	4
	6	8	6	8
	7	8	10	9
	8	9	16	13
Change of shells				
Decaying	34	38	41	
Change of shells				
Change of shells		11	14	14
Change of shells		8	8	9
Soft	19	4	"	
Left time	26	28	11	
Oct 2nd time	21	46	45	
Post Rock				
Repair				4
Waiting shells				

18<sup>th</sup> Aug. drilled  
5 holes + 2 drills, or  
100 ft.

## RAILROADS IN TEXAS

On the 10th of the month of the Great Central railroad yesterday afternoon what the advance of the day's work, Central and Houston, have railroad, and the largest locomotive in the world. The railroad company is therefore in which speed and power of locomotive construction built the monster of steel and iron in the shape of Great Albany. The locomotive was originally one of the large engines with driving wheels of feet 6 inches in diameter. The standard wheel is 5 feet 6 inches in diameter. As completed, it has driving wheels with a diameter of 7 feet and 6 inches, and the spread or distance between the axle of the wheels is 6 feet. The total length of locomotive and tender is 60 feet and the top of the smoke-box is about 14 feet from the rail. The top of the smoke-box, and tender are nearly on a level.

The weight of the machine is 100,000 pounds, two-thirds of which rests upon the four driving wheels. The cylinder has a diameter of 19 inches and a length of 64 inches. In order to make up for the loss of power resulting from enlarging the size of the wheels, the steam pressure was increased. The driver rests upon the frame and the door is placed at an angle. The locomotive is for service with the Empire State Express, and the officers of the road are confident that a record of record-making is at hand. The new top of the monster will take place on Monday, and before long it will have a chance to show its speed in a most exciting race.



**Charles Batchelor Journal, Cat. 1339**

This journal covers the period November 4, 1905-June 13, 1908 and contains entries by Batchelor about his business and personal affairs. There are also numerous pages of reminiscences about Edison and his inventions. Included are Batchelor's recollections regarding the electromotograph, the Incandescent lamp, the phonograph, and the storage battery. The book contains 300 numbered pages. Only the recollections about Edison have been filmed.

1006 New York

Oct 6 Sat Wet Taylor & Crall day.

7 Sun Damp & Bule

**Granby Consolidated Mining, Smelting & Power Co.**

Report.—The results for the year ending June 30 were:

Year—	Gross.	Net.	Dividends.	Bal. sur.
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1905-06.....	\$1,721,423	\$1,422,917	\$819,000	\$1,019,517
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1904-05.....	2,740,143	712,912	.....	712,912
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Average selling price of copper produced, 17.76 cents per lb.; of silver, 54.48 cents an ounce and gold \$25 an ounce. The net cost of copper, after deducting the gold and silver values, was 8.35 cents per lb. Construction expenses during the year amounted to \$105,370, and \$352,443 was expended to acquire new properties. Total surplus June 30 1905, \$2,547,219. The company produced 19,252,204 lbs. of copper, returned with 11,257,422 in the previous year; 218,947 ounces of silver, against 212,180; and 30,125 ounces of gold, against 42,361.—N. Y. A., p. 1612.

8 Mon. Fine Taylor's all day.

Registered & day.

9 Tues. Very Wet Taylor's all day.

No servants yet. Paid bill of Miss Galbraith 17<sup>th</sup> for 16 days at Sanitarium for S. & B.

10 Wed. Fine Taylor's all day.

Miss Taylor married tonight—N. B. & I went over—It was a very nice affair got home by half past eleven  
No servants yet.

11 Thurs. Fine but disagreeable wind & cold—Taylor's all day.

Dr. Doctor has been advising Emma to take quite some rest for about a month.

Start Johnson 50 today Granby 15.

News #22. Consists by Winston Churchill

12 Fri. Fine Taylor & Crall all day. Farmhouse started—

at Hergenshaler ship & day to test some bars of best iron.  
See

\* My collections of W. Edison

#1 The invention of the Phonograph.

This occurred at West Park N. Y. in the Edison Laboratory.

about the middle of the month of November 1877. I was Mr. W. C. C. Chief assistant at that time and had been so for some years. — He had been at work off on for years previous to this time and had developed a system of automatic telegraphy, one of the instruments for which consisted of a rapidly running small wheel carrying forward a strip of paper, with a stylus resting on it & wrote chemically the dots & dashes that came over the line. — Some of these instruments we had in the laboratory & much of the paper. —

We had also for a long time been developing the Edison carbon telephone, an instrument in which a diaphragm was made & put a varying pressure upon a button of pressed carbon by the vibrations produced by the human voice. — Many of these instruments were in the laboratory at the time and we used them daily. —

Some years previous to this date we had designed and made some machines for creating paper with paraffin (similar to the paper was used to wrap candies in) for making condensers for electrical work and a large lot of variable thickness of this paper created and unsalted was stocked away in the cupboards. —

When making different sized telephone diaphragms it was a very common usage to mount them in a frame with a work-piece, hold them up, and talk to them in a loud or low voice; at the same time putting a finger close to the center to feel how much vibration was communicated to them.

One night, after supper (which was prepared from at midnight) and at which all the principal workers sat down to gettin'; Mr. Edison who had been trying different diaphragms in this manner suddenly remarked "Do you know Karl, I believe if we put a point on the center of that diaphragm and talked to it, whilst we pulled some of that waxed paper under it,


so that it could indent it, it would give us back talking when we pulled the paper through the second time! — The brilliancy of the suggestion did not at first strike any gas. — It was as obvious that it would do so that occurs said "Why of course it must!!"

Said Mr. W. "try it mighty quick!" and we went to work. — Mr. Neuss the Chief Mechanician took the diaphragm to solder on to it at the middle a needle point about 1/8" long; he also took one of the automatic telegraph wheels and stands to fasten the diaphragm to so that we could draw the paper through easily.

I cut and got ready some strips of paper of different thicknesses of paraffin coating. — It was a matter of an hour or so when we all got together again to make a trial. — We fixed the instrument on to a table and I put in a strip of paper and adjusted the needle point down until it just pressed lightly on the paper. — Mr. Edison sat down and putting his mouth to the mouthpiece delivered one of our favorite stereotyped sentences used in experimenting on the telephone "Mary had a little lamb" whilst I pulled the paper through.

We looked at the strip and noticed the singular marks, then we put it in again and I pulled it through as many times at the same speed as I had pulled it in the first place and we got very ad ell am" something that was not fine talking, but the shape fit was there, and so like the talking that we all let out a yell of satisfaction and a "Glee!!" there!! and shook hands all round. — We tried it many times and in many different ways continually improving the apparatus during the early morning. — During the time that some of these changes were being made Edison & I would talk about the possibilities of such communication and it was then that we fully realized the brilliancy of the suggestion.



and the magnitude of its possible applications - Before breakfast the next morning we had reproduced almost perfect articulation from a strip of the waxed paper which I had embossed on it once  with a ridge in the middle running the whole length, the needle point in this case was ground chisel shaped.

Before the next night we had reproduced speech from a strip of tin-foil using again a rounded point needle, this was so remarkable that we decided to design a machine to experiment with. In a few days about the beginning of Dec 1877 we had this instrument finished. It consisted of a cylinder of brass turned by hand that was provided on its surface with a spiral groove running the whole length and being about 8" apart; the shaft also was cut the same pitch, so that when the handle was turned the cylinder moved forward uniformly.

A talking diaphragm was mounted on one side of the cylinder to record the speech, and a second more delicate diaphragm was mounted on the other side to reproduce the same - Each diaphragm could be moved away from the cylinder at will so that only one was in operation at a time.

So that the screw thread on the shaft engaged with, could also be disengaged so that the cylinder could be set back quick.

The cylinder was covered with a sheet of tin-foil and suitable devices were provided to hold it - This sheet could be put on and reproduced many times - The needle most generally used was a rounded point - Many thousands of experiments were made with this machine, and similar ones made immediately after, some of which were exhibited in different parts of the country & Europe whilst great crowds of people came almost every day to Menlo Park to hear with astonishment the reproduction of their own

17th Dec New York.

The original instrument here described is now in the South Kensington Museum London, Edison having presented it to that Institution.

13 Sat Very fine Taylor & Co all day Am off east nothing for Mergenthalers today

14 Sun. Very fine

Brooklyn Ferry Co. - Majority Deposited. - The Protective Committee for the first mortgage bonds announced Wednesday that more than a majority of the bonds had been deposited with the Ketchikan Ferry Co. under the agreement dated Aug. 29 last. The time for depositing the bonds will expire Oct. 12. - V. B. p. 274.

15 Mon. Fine Taylor & Co all day.

Went down to Spentis 115 Liberty & from there to their storehouse in Jersey City - Bought a Cincinnati planer 24 x 36 x 8" \$110 - Chuck & fine & freight

Had a talk with Mr. Storm about trucking New York posts

16 Tues. Fine Taylor & Co all day. Mr. Little & Little & Bailey called today to see if he could buy into our concern; I showed him & talked to him and after some conversation we decided to leave the matter until 'Gels back (he goes away tomorrow to get some about 3 weeks - Mr. Benson reports today that the iron is the best they have ever had

Our new Planer got here today all right

Saw Mr. Storms today and looked over his books of sales of gravel pits - They were about 7000 per year at 40 lbs each This could be very much increased if he could always get them

Let the furnace fire die out again today - it is very warm.

17 Wed. Fine Taylor & Co all day. Taylor gone off on a

## \* My recollections of Edison #2

An early opinion of Edison on the storage battery  
In January 1883 the French Edison Co were negotiating with M Garnier the architect of the Paris Opera house for the lighting of that building with incandescient lamps - At that time there were no Central Stations for distributing this method of lighting in Paris and the City did not permit of incandescent lamps being installed in the buildings or even under the sidewalks and the only possible way seemed to be either dynamos driven by Gas engines or by Storage batteries - In case the latter were used they would have to be recharged by dynamos driven by Gas engines or steam engines of small power - The largest Gas engine at that time did not exceed 50 H.P. - The Storage battery as a commercial success was quite new, a large company having shortly before been formed to work the Traue & some other patents I think - They had a few small installations running and one or two buses on the streets of Paris - I was very much against taking such a risk with an installation (very large at that time) of 8000 lamps with batteries because I had no experience with them and was very busy figuring out a plant with Gas engines -

M Garnier had pretty well decided & had expressed himself that no installation should go in there but a combination of the Edison system run by storage batteries -

I did not dare to say it could not be done so we had a few conferences to find out what guarantees they could give that such an installation if made would be successful -

Also my figures for a Gas engine plant showed such a formidable array of machinery to be put in the cellar of the house that it seemed desirable to know if it could be

done any other way. The principal negotiator for the battery company was a certain Mr. Phillips who had earned an invulnerable reputation for failing in some enormous railroad financing. He was a very bright man but somewhat brusque and short. I was somewhat in a quandary what to do when the negotiations were suddenly brought to a close in a somewhat peculiar and unexpected manner.

When the negotiations had proceeded to the point where I must have some information that I could depend upon as regards the performance of the cells under such a big load, Mr. Phillips seemed to have an idea that I was not favorably impressed for he suddenly left his seat and brought from his coat pocket a newspaper which he doubled up so as to show an article heavily underlined in places with blue pencil. He handed this to me and asked me if I thought Mr. Edison made those remarks, pointing to an underlined portion.

I took the paper and found it to be a copy of the N.Y. World some days before, and the article was the description of an interview of a World reporter with Mr. Edison at his laboratory or office. The underlined part was "Mr. Edison answered 'Hell you whenever a man begins to talk Storage battery, it brings out all his latent capacity for lying'".

I said that I thought it probable he might have said it as we had never had much encouragement from that line of experiment. Mr. Phillips, putting on his coat said "Well if that is so I want nothing more to do with Mr. Edison".

This ended the affair for the time.

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10 Nov. Thick all covered with ice Taylor & Co. all day  
wet and not much doing on new yard-shed

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Le 1976

- 21 Fri. Very Wet. This is my birthday and I can remember at home more than I can write. In all went to the Trade #15 at night. Belasco's I saw a charming piece called The Fox of the Kuchel quite the best little thing that we have seen for some time. We met Mr. Kierga & Clara Kierga & they joined us at supper in the private room of the Hotel.  
Went to Taylor & Co. all day.

My recollections of Exposition #3 The Centennial medal for the Electric Era. In 1876 Mr Edison made an exhibit of his Electric Pen and Duplicating Press at the Centennial Exhibition. This was a novel device for making any number of copies from a single writing in a short time. He had built a factory for this at Monte Park N.J. and I had an office for the sale of the same at 41 Bay Street New York City. I attended to the factory and the office in the daytime and then joined Mr E. at the Laboratory for the best part of the remaining 24 hours of it. It was a very awful novelty and took well with the public so much so that I had customers in almost all the civilized parts of the world.

The Exhibition at Philadelphia though well got and bestowed on us a bronze medal. One day this was presented to me at the office by some government officer. On that day Mr E. happened to be in the office and was waiting for me to go out on my regular train. As was usual in such cases all the way to the Ferry we talked over the different inventions of his that we were developing at the Laboratory and as interested and bound up in the subject were we that I got up from the boat and left the medal in its proper case on the seat in the boat. We had almost got to the train at Jersey City before I found my loss. When

I realized that I had left it I mentioned it to him & started back to get it, but he called me back saying "Don't bother. Some one will surely have picked it up" and we talked the invention all the way out to Monte Park. I doubt if he has ever given it a thought since.

22 Sat. Wet.

23 Sun. Fine again

24 Mon. Fine Taylor & Co. all day

25 Tues. Fine Xmas day Got silver watch from Mrs. Wm.

26 Wed. Fine Taylor & Co. all day.

27 Thurs. Fine Taylor & Co. all day. Two lines of sky light flames on.

28 Fri. Wet. Taylor & Co. all day. M.

Our Kinship is at night.  
Read #33 "The Patriot" by Antonio Fogazzaro. Italian novelist. His Nation is very much in vogue at present on account of his novel "The Land" being placed on the Index. I'm said to be exceedingly clever but from what I read in the Patriot I see no signs of genius. It is just a common well written story with very little of its title shewing in the reading.  
Read #34 "Auch of Pader" by Maynard Rippling

29 Sat. Wet. Taylor & Co.

\* Notes on Edison's "H." The story of carbonizing a paper for incandescent lamps. Newark, N. J. Edison: As a witness for Edison in this suit at 65 5<sup>th</sup> Avenue July 8<sup>th</sup> 1881 I was asked to give a summary of the progress of the invention of incandescent conductors for electric light made of carbonized paper from the beginning up to the commercial lamp. It is 26 years ago but I think it states the facts as we had gone through them. I said:—

"The history of electric lighting by incandescence with paper carbon by W. Edison, as far as I know it, is as follows:— In the summer of 1877 he used strips of paper carbonized as an incandescent conductor in vacuum, and the lamp in which they were used is now in evidence and marked Exhibit A Edison's First Incandescent lamp. I should have said here that I remember Edison, within a day or two previous to this lamp being made, using carbonized paper as an incandescent conductor between two electrodes of a battery, but in the open air. The next experiment, or series of experiments, that I call to mind are the two which I have before spoken of as being made in August or September 1878— certain point my whole time and attention began to be directed to development of his system of incandescent electric lighting. These paper carbons were made by coating thin papers with lampblack and tar, and rolling up tightly into a rod, drying and carbonizing the same in a suitable furnace. Some of these paper carbons were put in between the two electrodes in an electric circuit and raised to incandescence in a vacuum. At this time carbons made of paper were not the only things that we tried as incandescent conductors in a vacuum. We made many experiments with hard carbons, wood carbons, and some metals, such as platinum, nickel and iron. It had early been decided by W. Edison that the requisite material for his incandescent lamp should have a great resistance combined with the least possible surface, and I remember well that at this

time and previous to this we used to expect that we should have to get a substance for an incandescent conductor that would give us at least 500 ohms resistance. The result of this latter series of experiments in vacuum had shown us that in order to get a high resistance lamp from carbon in any form, it would have to be cut in an exceedingly fine filament. The paper carbons which we tried were larger than we should have to use if we wanted a higher resistance. With the vacuum we then got, and which we considered at that time to be good, the carbons lasted at the most from 10 to 15 minutes in a state of incandescence. The experiments with platinum led us to hope that it might be easier to get a high resistance from that metal than from carbon. From the date of the finishing of these experiments which, I believe was towards the latter end of October 1878 W. Edison turned his attention to lamps in which the incandescent conductors were formed of metals and alloys of metals. During the last part of the year 1878 and up to October 1879, I made at W. Edison's request, a very large number of lamps having platinum and platinum-iridium employing the incandescent conductor. A great many of these lamps had their conductors coated with insulating material, in order to be able to wind them up close and get them into as small a space as possible in order to offer the least radiating surface. W. Edison very frequently sat down at my table and worked for hours helping me on these experiments. Our conversation frequently was directed to getting the highest resistance in the least possible space. I remember once or twice during these conversations, early in 1879, he remarked how easy it would be to get this resistance if carbon was only stable. During the time that I was experimenting on these lamps he had been busy experimenting to perfect the different apparatus employing

his electric lighting system as a whole. I had also worked on these matters, but as our lamp was an exceedingly difficult job the majority of my time, both night and day, with the exception of a week or two in which I devoted some time to telephones, was spent on the lamp - He had succeeded in making a more perfect dynamo machine - In testing the lamps with platinum conductors he had been continually improving the apparatus for exhausting the globes.

In October 1879, when he had got a very perfect vacuum for his lamps, he suggested the use again of carbonized paper as a conductor, and accordingly he had me cut a fine filament of paper, which we carbonized and put in a globe. This filament, I believe, was cut straight from paper and bent round, previous to putting in the carbonizing chamber. I do not remember what we did with this lamp afterwards: but within a day or so of that I cut a loop from paper similar in shape to the one now in Edison's Commercial Incandescent Electric Lamp. At the same time that these were being tried, I also made lamps of loops of carbonized thread, carbonized flax, fine filaments of lampblack and tar rolled up and baked, and, also, threads which had been treated with lampblack and tar previous to carbonization. All these things were used as incandescent conductors about the same time, the most satisfactory then being the carbonized paper loop which I had cut by hand.

We immediately after this made a steel mould in which these loops could be cut quickly, and after a few experiments in the carbonization of them, in order to get their resistance as nearly as possible alike, we made a number of these filament lamps and used them at an exhibition in Mr Edison's house about the 2<sup>d</sup> or 3<sup>d</sup> of December 1879 -

Many of these paper lamps were used and a great many were run on life test some even running a year after this date

1907

239

See

to Dr Rice for treatment - I told him Emma had passed a very bad night - When I came home I found he had been and had installed a trained nurse - Emma's ear was to be douched every hour all night I got another room #6 to sleep in for which they charge me \$5 per night

12 Thurs New York Fine Taylor & Co all day  
Dr Rice's this morning for treatment

13 Fri. New York Fine Taylor & Co all day.

Dr Rice for treatment

Morton Hiss called on me to have a talk about the Edison battery I told him I had no knowledge at all of it; all I know about it is from Magazines papers and by hearsay - He said he had assurances from W. K. of the Pen R. R. and others, that if he could put a battery on their trains that would run from N. Y. to Chicago and back without recharge they would put it on all fast expresses, failing that if they could supply a battery to run from N. Y. to Chicago and then recharge it here and run back to N. Y. they would accept it. - Hiss says that if Edison will guarantee this he will permanently go in and work it up

Hiss has seen L. A. C. at the laboratory during the last few days and has talked a great deal with him - He reports him as looking well but older - L. A. C. told him his battery was working satisfactorily on 300 delivery wagons for Tiffany, Altman, Gorham and others in N. Y. and advised him to get reports from them - The fault, he said, with the battery as it runs today was that it lost contact with repeated charging and that means increased resistance and loss of efficiency

I presume this means that with repeated chargings the oxide in the cell passes lighter on its enclosing case than when first made -

This defect O. claims is now remedied in his latest outfit which will be on the market in 1908

His is looking old, I should judge him as 70, but he is very active and well pleased.

First Louisville Exposition Lighting - Mr. Hine told me that when he made the contract for lighting the Louisville Exposition in he had only been engaged by the Edison General Co. a couple of months - He Co. had decided to take all the lighting he could get at \$5 per lamp for the 100 days of the Exhibition - At that time and soon sent back a contract to sign - In it the Exposition Co. was to furnish all Allen-Bradley engine of 500 ft. and counter shaft to run the dynamo the number of lamps (about 5000) was to be determined on when the experts came from New York - A few days later Moore and Sturges appeared and were frabagasted at the size of the installation (the biggest installation ever attempted at this time was about 1000 lamps in a cotton mill).

On the ground after looking it all over Moore said to him 'Why the devil did you not take a contract to light the Mississippi?' He said, 'I would have done if I could have found the other man', I knew nothing about this business except that you sent me here to get all the lighting I could get at a certain price, and now if you say you cannot do it then we and I will get out of it -

The people at the N.Y. office said Mr. Hine was crazy to take it and Edwin the first suggested that he be asked to come away.

He comes to New York and saw Edison, and much to his surprise found him clever and the only one who thought he had done a good thing - Edison decided immediately that it must be done and went at it with such a will that Sturges appeared in Louisville in about 8 weeks with the receipt for installing 5000 lamps.

This was just the inside lighting and Hine said the Exposition Co. then gave the outside lighting to the Gas Light Companies.

Hine said he supposed he had done a brilliant thing but he found everybody in N.Y. opposed it and wanted to abandon it.

They however pulled it through and the Company got \$10,000 for the lighting and afterwards sold the machines to the permanent Gas Co. -

Hine said that after it was all through he went to N.Y. and Eaton rose when he went into the office and took him by both hands and said he had done a big thing for the Co., then turning to Hastings the Secy. said Hastings make a check to him for \$2500. Hine said he kind of hesitated at first to take it as it was so small but after consulting with some of his friends down town he thought he would not refuse it as there might be more work to be done in the future - He thought it was particularly small after all the work he had done and his work had turned out so well -

The arrangement was \$100 per month and his expenses but that knew very well he expected more - After that he always insisted on 10% of the receipts of the Co. and got it -

Dec 14 Sat. New York Very wet and snow Did not go out  
As I sat writing in Feb. Mr. Lee Spott came in with two gentlemen to show the room - One was R. L. Grier - quite a surprise for both of us  
Dr. Rice is at 5 p.m.

15 Sun. New York Damp and a little rain  
Mr. T. H. Joffrey called in afternoon - Emma better and I think we can dispense with nurse tomorrow

16 Mon. New York Fine Taylor to all day. Dr. Rice in  
Ret. the room 9. 5 days at \$20 and gave up extra room  
Columbus and Stella in today

17 Tues. New York Fine Taylor to all day Dr. Rice in  
Letter # at Wendelston Hall. Capt. Reed Amundson - the North West passage and the magnetic pole



Feb.

of the Met. Sheet Mfg. Co. of. third gold 5<sup>th</sup>

9. Rem. N. Y. Fine (copy)

Oct. 1850

To Dr. Forbes - Waked up slowly and had pain in left chest which extended up left throat when I breathed; more so when I drank against a cold wind - no pain in legs - He gave me pills in legs a long time and I held the pills a longer time also vibrator - The theory was in that the state of the stomach for a long time has been bad, acidity or fermentation or gas forming, instead of proper digestion, this has impaired the circulation by leaving impurities in the blood making it more sluggish in the arteries.

He changed my medicine to be taken after meals - and kept on with the morning drink for the liver

In all the walking I have done today I feel no pain in legs.

Geo. Klein - In to discuss the failure to pay coupons on the Bonds of N. Y. Bonds of Klein Estate -

### \* Reminiscences of Edison #5: His Electrotypography -

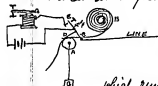
In the year 1875 whilst working out a system of rapid automatic telegraphy, Mr. Edison discovered a new principle on which he built an instrument to replace the relay in ordinary telegraphy and which could have been built up into a new system of telegraphy if there had been no such thing known as a magnet with its armature.

In the above mentioned system of rapid telegraphy a strip of chemically prepared paper was passed rapidly beneath a stylus of metal and received a mark from it each time a current of electricity was sent over the line, the result appeared as a blue mark on a yellow paper or a black mark on a white paper according to which stylus and which chemical was used

at the time - To find the best mark and the best paper, he made a great many experiments with a small apparatus that I made for him in which he could try any metal on any solution in a very short time.

His experiment worked as follows: a metal plate was fastened on the table and connected to one pole of a battery, the other pole being connected to a brass disc from whose edges radiated a stylus of very hard metal - A piece of paper being saturated with a solution was then laid on the plate and one after another all the different metals were rubbed along the paper whilst the current was being constantly made and broken that passed through both - A paper moistened with persulfate of Potassium when put in contact with an iron stylus and the current passed through would receive a blue mark (permanent) on a yellow ground - Another moistened with iodide of Potassium and passed under a platinum stylus would receive a brownish or purple mark on a white paper (not permanent) in these two cases the stylus was connected to the pole that gives off O<sub>2</sub> - If the paper was moistened with Auriferous Potash (weak) and a stylus of Tellurium was used the paper would receive a dense black mark on pure white paper and in this case the stylus would be connected with the pole of the battery at which H<sub>2</sub> is given off.

Working with this apparatus Mr. Edison discovered that whenever the current passed through the friction of the stylus on the paper was diminished - This action was much more marked with some solutions than others and was exceedingly sensitive to very weak currents, so much so that he thought that messages could be received over a wire better and more rapidly than with a relay which is limited as to speed by the charge and discharge of the magnet.



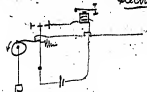
Mr. Edison designed and made an instrument making the moving parts exceedingly light to permit motion - A is a metal drum run by clock work over which runs a strip of moistened paper B and under a stylus D

that is hinged to an upright lever C. This lever moves between points at E and works a commutator in the usual manner - When current is passed over the line the stylus at D slips forward and makes contact at E and when the current is interrupted the spring F draws it back -

This proved to be a most remarkable instrument; the relay owing to its inability to charge and discharge its magnet quickly could never get up to more than 60 or 70 words a minute on long lines and then only with careful adjustment; but this worked at that speed so that very little adjustment was necessary and it has been worked up to 400 words a minute - This seems incredible when you think how many movements the little lever must make (about 10000 per min) but we proved it by making it repeat the message on the automatic telegraph from the original punched paper strip

## Electrotypograph

no train system



In the year 1875 whilst  
working on an improvement of the  
system of Au-

tomatic telegraphy which used a strip of chemically  
saturated paper to receive the message he dis-  
covered a new principle on which he bases an  
improvement which he has now inaugurated a <sup>new</sup> <sup>system</sup> of telegraphy. In the above system <sup>using</sup>  
a strip of chemically prepared paper was passed <sup>rapidly</sup>  
beneath a stylus of metal, and received  
a mark from it, as the result of a chemical action  
during the passage of the current. The result  
appeared as a blue mark on a yellow paper or  
a black mark on a white paper according to  
the metal stylus used and the chemicals in the  
paper. To find the best mark and stylus  
he made a great many experiments with a small  
apparatus I made for him whereby he could try any  
metal in any solution in a very short time.  
A piece of paper in any liquid & then could try

on it each of the known metals. <sup>all of</sup> which I had mounted  
on a holder <sup>from these metal cylinders</sup> radiating out from the Centre.

The experiment worked as follows: a plate was  
fastened on the table and connected to one pole of a  
battery, the other pole being connected to a brass disc  
from whose edges radiated styluses carrying all the  
known metals. A piece of paper being saturated  
with a solution was then laid on the plate and  
as the styluses passed along whilst the  
current was made and broken, the metals were fixed on it.  
A paper moistened with Ferricyanide of Pot. when  
put in contact with an iron stylus would, <sup>when the current</sup> make a  
blue mark (permanent) on a yellow paper. Another  
moistened in Iodide of potassium & passed under  
a platinum stylus would produce a brownish  
mark (not permanent) on a white paper. In these  
cases the stylus was connected to the pole that gives  
off. Again if the paper was moistened with  
Potassic iodide and a stylus used of tellurium could

3

connected to the H end of battery a densely black mark would be shown (permanent) on a white paper - With this apparatus we made many hundreds of experiments and Ed. discovered that whenever the current passed through, the friction of the stylus on the paper was diminished - This action seemed to be much more marked with some solution than others and was exceedingly sensitive to a very local current - so much so that he thought that an instrument could be made that would receive messages far more much quicker than a relay which is limited to the time which is required to charge and discharge a magnet -

He therefore designed the following instrument (see patent) making the moving parts exceedingly light to prevent inertia - This proved to be a most remarkable instrument - The relay, owing to its

4

inability to charge & discharge quickly could never get up to more than 60 or 70 words a minute on long lines and then only with careful adjustments but this <sup>proved at that time</sup> did ~~that~~ as easily that no adjustment was necessary and it has been worked up to about 200 words a minute - This seems incredible when you think how many ~~words~~ the little lever has to make & record 1200 words (about 10000) but we proved it by making it repeat the message <sup>showing paper of the</sup> on the Automatic telegraph from the original punched paper strip

This was not of great need in telegraphy at the time as the operators could only receive 6 words a minute, and there was only one company to sell it to the <sup>the West</sup> ~~West~~ which had bought out all competitors <sup>the Mutual Union Telegraph</sup> ~~the Mutual Union Telegraph~~ however a new company, <sup>the Mutual Union Telegraph</sup> ~~the Mutual Union Telegraph~~ appeared in the field and began to cut prices - The M. U. as it had done before raked up some absurd claims about owning the so called Page patent whereby it seems they

that is hinged from upright lever C - This lever moves between point at E + works a cammer in the usual manner. When current is passed over the line the stylus at P lifts forward and makes contact at E + when the current is cut off the spring F draws it back

16 100000 6250

241  
40  
32  
50  
50

They could prevent any one using an armature with a retarded spring before this type of telegraph came out of a magnet - The Mutual Union was formed by President of I. & O. by purchase of some arms towards securing the Jay Gould and Mr. C. L. L. offered the telegraph relay magnet - to the W. A. L. Co but Mr. O. informed him that he could not see his way to buy it - He then offered it to Mr. Gould for 100,000 and when there seemed to be a probability of this offer being accepted Mr. O. sent for him and made a contract to pay 100,000 for it in 16 yearly payments of 6250 and they looked the instrument up and as far as known it has never been used since for telegraph work

7.8 M. P. Surin 249 W. 57 St.  
21 Prof and this has the times  
48 Karasid not all as my wife  
quitted

Myler and all down 149  
not 348 foot on air to see some  
machinery for sale

19 Sur. N. Y. My fine Oct 4/18  
Myler for all day.  
Self copy all today and my  
ago better we see than ordinary  
It was fine and dry took a new  
band and fairly cold.

19. Med. N. Y. Lute a snow storm  
which lasted no heavy Oct. 5  
has all day. I did not go out

"6 Reminiscences of Edison"

Jim Hillings Father's Friend of  
Edison came in 1918

Mr. Father of New York in memory  
of the man Karasid, and one of the  
foremost discussions in an Obituary  
in 1918 it was said that  
there is a newspaper correspondent.

In regard to Edison, if a person  
has witnessed the Lightning Karasid's performance he can form

## EDISON'S SECRETARY A SUICIDE.

Unexplained Act of John F. Randolph, Treasurer of Edison Companies.

QUONON, N. J., February 17.—John F. Randolph, who for the last fifteen years had been private secretary to Thomas A. Edison, and who was also treasurer of the various Edison companies, ended his life in the office of his home this morning. He went into the office about eight o'clock, taking with him a shotgun, and a pistol, which he had secured in the kitchen. He placed the stock of the gun against the wall, and the barrel pressed his body. He then used the pistol to pull the trigger of the shotgun. The charge struck him in the heart, killing him almost instantly. The noise of the shot was heard by his wife, and she rushed into the room to find him lying on the floor of the office. She went out to her three children for a doctor, but when he arrived he said the man was dead.

News of the tragedy was soon communicated to Mr. Edison, and he rushed over to the house, and succeeded in obtaining Mrs. Randolph.

Mr. Randolph was forty-five years of age and lived with his wife and three children on Volney Way, in West Orange. He had been associated with Mr. Edison for the last fifteen years. Some time ago he was made treasurer of all of the Edison companies, and he held that position up to the time of his death. He left letters to his wife, Mr. Edison and Mrs. Edison, to William H. Gilmore, the general manager of the works, and to Peter Weber, superintendent. As far as can be learned there is no reason known for the man's act. Mr. Edison refused to say whether the dead man was in financial trouble, or to give out the contents of the letter to him.

Randolph passed twenty-five years in company with several relatives and friends, and with his own family, and appeared to be cheerful. No one noticed that he had anything on his mind. Chief of Police Harbord of the West Orange police went in to the house with two of his detectives and began an investigation. Thomas A. Edison, at his laboratory this afternoon, said that Randolph's account was perfectly correct. Mr. Edison's statement was confirmed by William H. Gilmore, general manager of Mr. Edison's business interests, and by Alphaeus Weston, general auditor of the National Photographic Company.

Mr. Edison said that Randolph had been in his employ for thirty years. He started in as a boy when Mr. Edison was engaged in experimental work at Menlo Park, and accompanied the inventor when he came to Orange. Randolph, said Mr. Edison, was not overworked, and had all the assistance he desired. Mr. Edison was the opinion that his secretary's mind had become unbalanced. On Feb. 17, 1918

some idea of the manner  
in which this man in-  
volved—You made a  
suggestion and before  
you had explained what  
it meant, he was  
"he got it!"

Now it is but common  
with all sort of foreign  
matter, which he soon  
drove off leaving per-  
fect—No it is this all,  
he then said: Now the  
clips he has this  
made a deep im-  
pression which he was  
not looking for.

Again  
Is the Herald No 25  
148.

This is our matter  
in regard to Mr. Edison  
that Mr. F. Randolph  
was to state and that  
he considered Edison  
has now approached his  
past time or his electric  
inventions to feel some-  
thing he fully realized  
quite we had the utter

TREASURER OF EDISON COMPANIES  
KILLS HIMSELF IN CELLAR OF HOME

JOHN F. RANDOLPH.

John F. Randolph, Leaving a Letter Disposing of His Property,  
Tells Wife He Always Had Been Honest—Inventor  
Says His Employee Was Deranged.

John F. Randolph, treasurer of several of the Edison companies and private secretary to Thomas A. Edison, killed himself in the basement of the home in Volney Way, West Orange, yesterday morning.

After having left all his books, records and other papers in his office, Mr. Randolph was found dead in the cellar of his home. He was lying on the floor, with a shotgun wound in his heart. He was dressed in a suit and tie, and his hands were bound behind his back. He was found by a neighbor who called on him to see if he was all right. He was found dead at about 10 o'clock.

Mr. Edison was informed of the death of his secretary this morning. He was very shocked and immediately sent for a doctor. The doctor arrived at about 11 o'clock and pronounced the man dead. Mr. Edison was very much distressed by the death of his secretary.

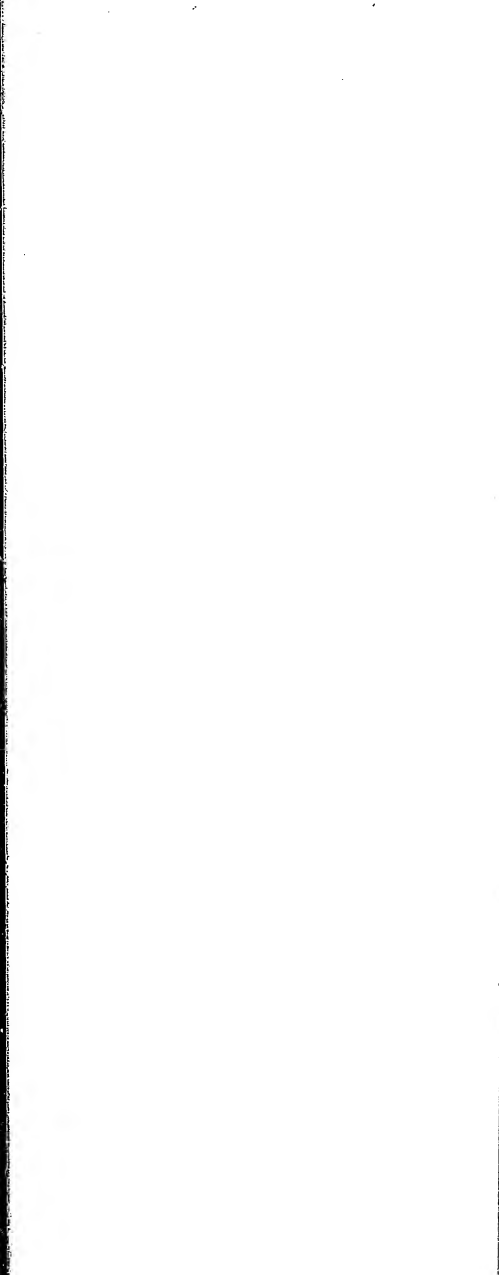
Mr. Randolph was a very quiet and unassuming man. He was very devoted to his work and was very loyal to Mr. Edison. He was a very good friend to all who knew him. He was a very honest man and was very truthful in all his dealings.

Mr. Randolph was a very good man and was very devoted to his work. He was a very loyal man and was very honest in all his dealings. He was a very good friend to all who knew him.

Mr. Randolph was a very good man and was very devoted to his work. He was a very loyal man and was very honest in all his dealings. He was a very good friend to all who knew him.

Mr. Randolph was a very good man and was very devoted to his work. He was a very loyal man and was very honest in all his dealings. He was a very good friend to all who knew him.







#### CHARLES BATCHELOR NOTEBOOKS, 1874-1909

The eighteen books in this set contain notes and drawings relating to experiments conducted by Batchelor, Edison, and others during the years 1874-1909. The two earliest books, covering the period June 1874-September 1878, deal with a wide range of topics including electric lighting, the electric pen, the phonograph, telegraphy, and telephony. Many of the entries on telegraphy and telephony pertain to Batchelor's own inventions. The remaining books are primarily concerned with electric lighting experiments during the years 1878-1886. Of particular importance is a shop order book (Cat. 1308) used in 1879 and 1880 to record experimental devices made in the machine shop at the Menlo Park laboratory. Four other books (Cat. 1301, 1302, 1303, 1235) contain a numbered set of electric light experiments. The first three books deal exclusively with lamp tests, while the fourth contains a wide range of electric light experiments and tests. A few notebooks also contain entries pertaining to ore milling and miscellaneous other technologies from the late 1880s through the first decade of the twentieth century.

All of the notebooks relating directly to work performed for Edison have been filmed, with the exception of one book from the 1890s recording routine ore assays for Edison's mining operations. Three other notebooks have not been filmed: two books from the early 1880s (not by Batchelor) containing tests of French storage batteries and comparisons of Edison's electric lighting system with other systems; and one personal notebook containing notes and experiments by Batchelor from 1889 through 1905.

##### The following books have been filmed:

1. Cat. 1307 (1874-1878)
2. Cat. 1317 (1875-1878)
3. Cat. 1308 (1878-1880)
4. Cat. 1304 (1878-1890s)
5. Cat. 1234 (1879-1895)
6. Cat. 1237 (1880-1884, 1894, 1899)
7. Cat. 1301 (1880-1882)
8. Cat. 1302 (1882)
9. Cat. 1303 (1882)
10. Cat. 1235 (1883-1909)
11. Cat. 1311 (1882-1883)
12. Cat. 1306 (1883-1884)
13. Cat. 1305 (1879-1886, 1891, 1897-1898, 1909)
14. Cat. 1381 (1882-1884, 1886-1893)

##### The following books have not been filmed:

1. Cat. 1236 (1883)
2. Cat. 1309 (1883?)
3. Cat. 1342 (1889-1905)
4. Cat. 1310 (1891-1900)

Charles Batchelor Notebook, Cat. 1307

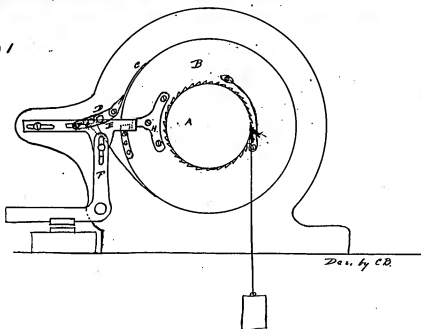
This notebook covers the period June 1874-February 1878. All of the entries are by Charles Batchelor. The notes and drawings relate to telegraphy, the telephone, the electric pen, the electromotograph, the typewriter, and various mechanical devices. Some of the entries pertain to Edison's inventions, but many also concern Batchelor's own ideas. Pages 29-41 and 43-44 contain impressions of plates, which may have been intended to accompany an 1874 manuscript by Edison and Batchelor on telegraphy. This material can also be found in Notebooks, Cat. 297 and Cat. 298 (Thomas A. Edison Papers Microfilm Edition, Part 1, reel 5), and it has not been refilmed. The book contains 74 numbered pages and an index. Pages 1-40 were numbered by Batchelor. The remaining pages were numbered by an archivist.

Blank page not filmed: 25.

# Index.

District No. 1, 2, 3, 4, 5, 6, 14.

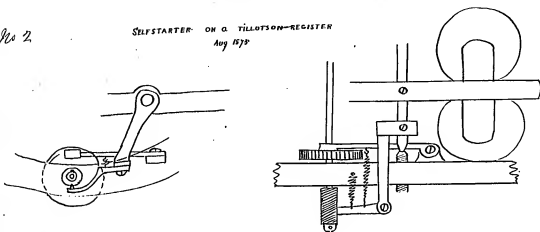
No 1



June 16<sup>th</sup> 1874      EDISON'S DOMESTIC TELEGRAPH RECEIVER.  
New Brake stop movement.

No 2

SELFSTARTER ON G. TILLOTSON-REGISTER  
 Aug 1878



*Break wheels & Cou*

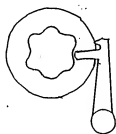
No 3



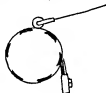
4



5



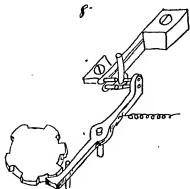
6



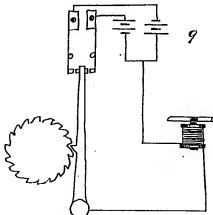
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8

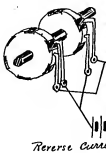


9



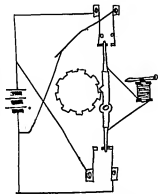
*Reverse current 2 batteries*

10



*Reverse current*

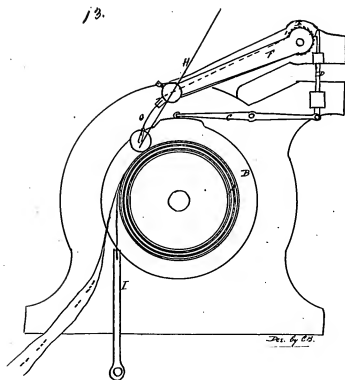
11



*Reverse current 1 battery*

12





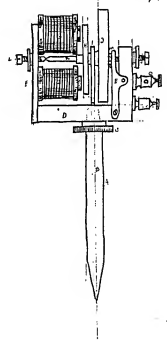
June 16<sup>th</sup> 1874

EDISON'S DOMESTIC TELEGRAPH RECEIVER.

For lifting movement =

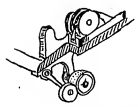
PEN FOR AUTOGRAPHIC PRESS

16



EDISON'S PEN  
JULY 1891 1870  
for  
AUTOGRAPHIC PRESS.

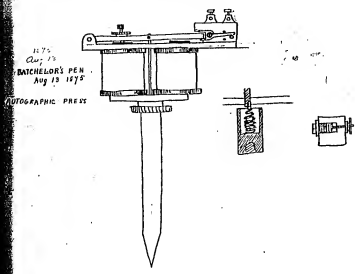
14



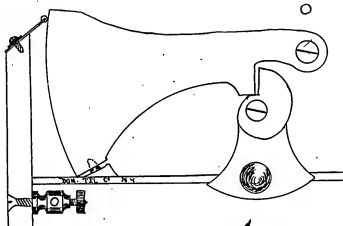
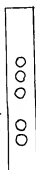
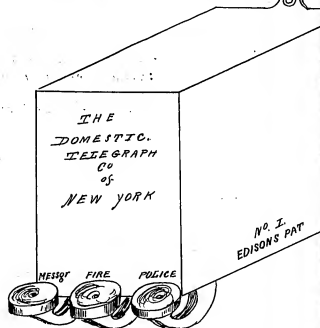
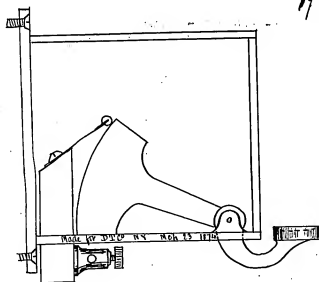
Edison self-winding for winding message  
of no set in records.

15

PEN FOR AUTOGRAPHIC PRESS



1875  
Aug 23  
BACHELOR'S PEN  
Aug 13 1875  
AUTOGRAPHIC PRESS



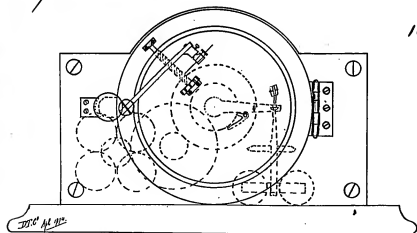


*Type Wheel*  
:VCBHPADMXRZK ELNTQWUFQJTY. 1987536-42801.

*Scrap wheel 20 teeth*

TAP 20

April 10<sup>th</sup> 1874 Receiving Invt for Forensic Sci. Co.  
 Chicago by — CA

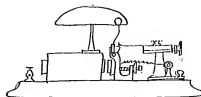
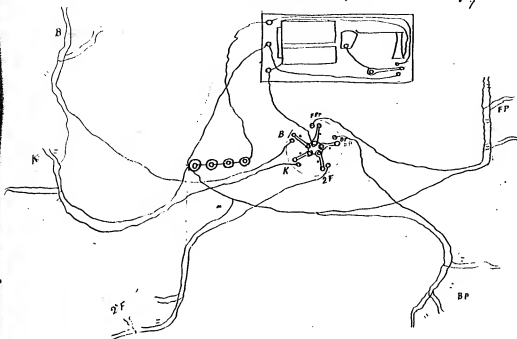


18



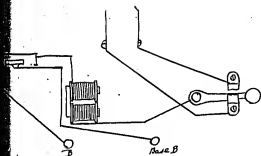
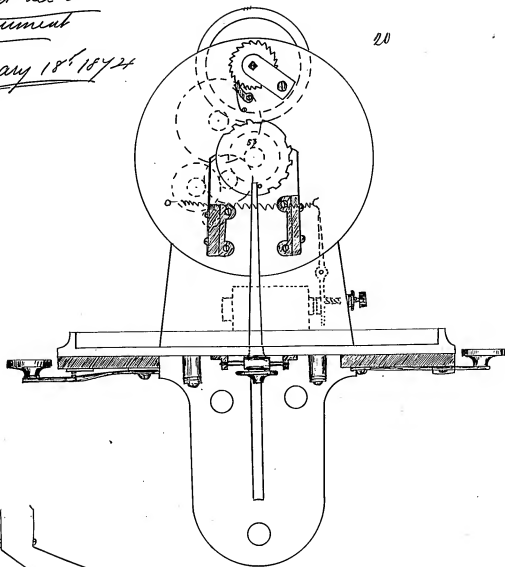
HOMER BURGESS ALARM, FIRED BY B 3  
 SEP 10 1877.

19



Dutton & Co.  
Inventors  
January 18<sup>th</sup> 1842

20



# Tuning Forks. 21

7

Formula for calculating a fork to give any required number of vibrations per second

$$V_s = \frac{K e}{(l + 4)^2}$$

- $V_s$  - Vibrations  
 $K$  - 818 240 (Constant of Steel)  
 $e$  - Thickness of prong  
 $l$  - length of bottom of curve  
 $4$  -  $\frac{1}{4}$  inch constant for base

All measurements in millimetres. To convert inches into millimetres (multiply by 25.4 (near enough))

Example:- Given fork 6" long &  $\frac{3}{8}$ " thick to find the vibrations:-

$$\frac{3}{8} = \frac{K e}{(l + 4)^2} \quad \frac{3}{8} \times 25.4 = 9.525 \text{ in}$$

$$\begin{array}{r} 818\ 240 \\ 9.525 \\ \hline 4091350 \\ 1636540 \\ 4091350 \\ \hline 7824430 \end{array}$$

$$\begin{array}{r} 25.4 \text{ in} \\ 6 \text{ in} \\ \hline 152.4 \\ 4.0 \text{ constant} \\ \hline 156.4 \end{array}$$

$$\begin{array}{r} 156 \\ 156 \\ \hline 24336 \end{array}$$

$$24336 \overline{) 7824430} \quad 320.2 \text{ vibrations}$$

$$\begin{array}{r} 7824430 \\ 48008 \\ \hline 40322 \\ 48672 \\ \hline 48672 \\ \hline 0 \end{array}$$

$$\therefore V_s = \frac{K e}{(l + 4)^2} = V_s = \frac{818\ 240 \times \frac{3}{8}}{(6 + 4)^2} = \frac{818\ 240 \times 9.525}{(152.4 + 4)^2}$$

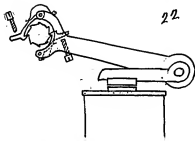
$$= \frac{818\ 240 \times 9.525}{(156.4)^2} = \frac{779\ 4021.75}{24336} = \frac{320.2 \text{ vibrations}}{\text{per second}}$$

Spice method.

JULY 11<sup>th</sup> 1874  
Finished

8  
EDISON'S NEW UNIVERSAL PRIVATE LINE  
PRINTER

22



New Escapement.

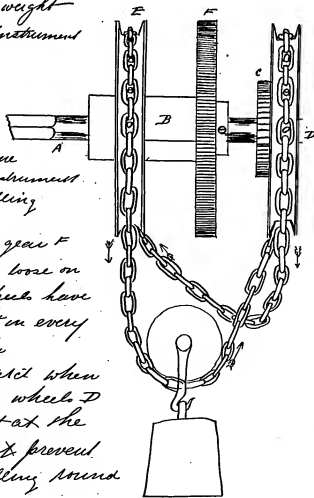
Sep 3 1894 9

A method of winding a weight  
up without stopping the instrument  
that it drives

A is a shaft on which  
the wheel D is firmly fixed  
& the ratchet C also.

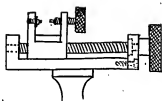
A pawl is fixed on the frame  
of any suitable part of instrument  
to prevent the weight pulling  
round the wheel D.

B is the hub of the large gear F  
& chain wheel E & runs loose on  
shaft A. The chain wheels have  
pins in the groove to fit in every  
other link in the chain.  
As may be seen from sketch when  
A is turned & weight the wheel D  
lifts up the weight but at the  
same time does not prevent  
the weight from falling round  
E.



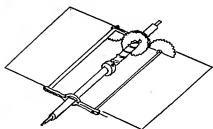
23

24

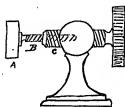
Sep. 6, 1874Good adjustment for  
Polarized Relays.Sep 6 1874

25

Expanding Fan.

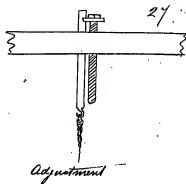


26



Adjustment for a Relay etc.

A Armature  
B Left hand screw  
C Right Hand screw

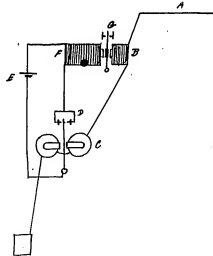


Sep 5<sup>th</sup> 1874

11

28

Method of reversing a current through a relay without opening the points.

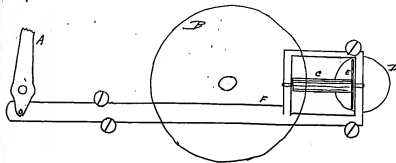


A is line passing through B & C to ground.  
C is polarized magnet which whatever the line is charged or not, closes the local current for magnet F which acts as a spring for armature.

A positive current now comes over at A drawing armature to magnet B, & also over to C. Reverse it & the polarized magnet working quicker than the ordinary from local & prevents F from pulling armature.

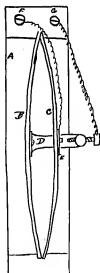
29

Speed Regulator for clockwork.



B is a crown wheel on the end of the shaft, & runs in the pinion C on wheel in disc E.  
Disk E rides on D disc which is fastened to fan shaft.  
Whole carriage F is moveable, & when moved to the left, so that disc E is nearer the edge of D it allows the pinion C to move quicker.

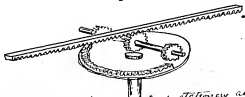


Dec. 6<sup>th</sup> 1874

## Hard Rubber Thermostat.

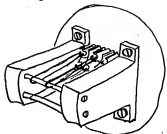
About Nov 8<sup>th</sup> Edison suggested to me that  
as Hard Rubber had such great expansive properties  
we should make a thermostat of it & try it.  
Made me a drawing & it worked well.

31



Adapted from a rotary stationary at each end  
Sept 19 1878 1/2 p.m. Wyke's Speed Gauge

32.

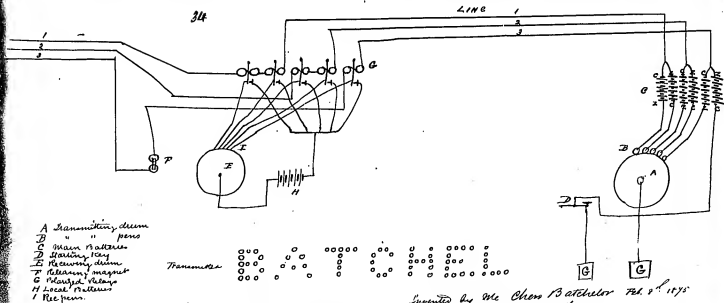


New arrangement for drawing back the  
bars on I. Refractor put on Feb. 5<sup>th</sup> 1878  
& adopted in future

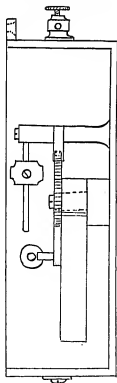
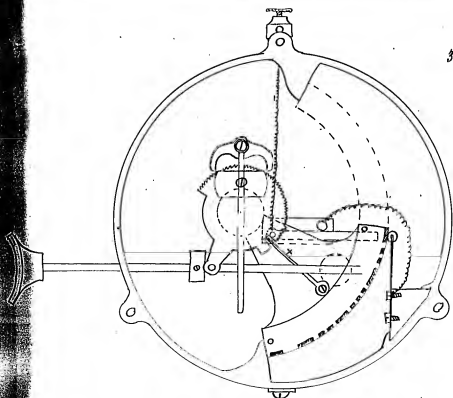
33.

*Batchelor's Morse & gold quotation printer*  
*Pat. 8<sup>th</sup> 1878*

13



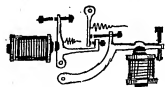
*Principle  
 is true.*



Box for Domestic Telegraph Co NY Designed by Chas. Batchelor Nov. 22<sup>nd</sup> 1874  
 It matters not how hard or soft the person pushes in the button the signal will always  
 be sent at the same speed. The returning mechanism is not "let go" until the arm is on the  
 down stroke so that a message from 349 would be received thus: — — — — —. The first long dash  
 counting as nothing, the escapement & ball prevents the arm from coming down too quick & the spring X prevents  
 the dete from being cut up by the jar of the lever.

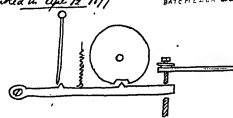
-Drawn Jan 24 1875  
NEW STOP FOR DOMESTIC RECORDER  
Inventor in Appl. 12<sup>th</sup> 1877  
BATCHELLER BACHMAN

36

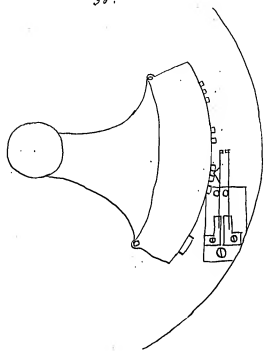


Genit Smith's separator

37



38.



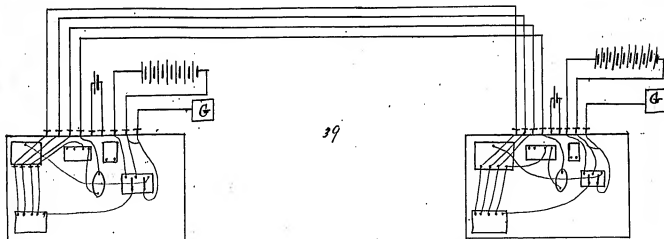
April 25<sup>th</sup> 1875  
Made new box on the principle  
for Domestic Tel Co. & it works  
first rate better than any other  
also much cheaper.

C Batchelor

Written May 1<sup>st</sup>

Roman Letter on 4 wires

16



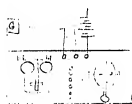
Successfully worked between New York + Philadelphia  
by T.A. Edison & E. Batchelor Sunday Jan 31<sup>st</sup> 1875

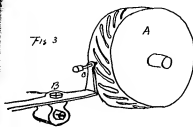
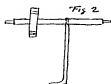
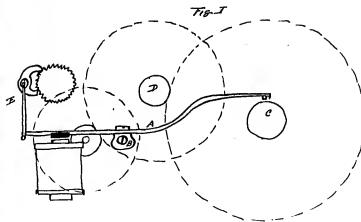
DUPLEX TO PREVENT ANYONE

40

TAPPING JAYCOULDS WIRE

EDISON JULY 1<sup>st</sup> 1875

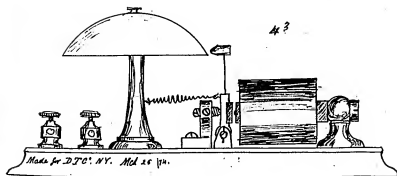
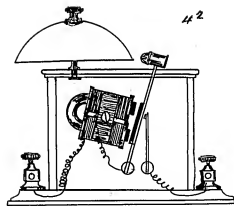




In my Street Printer, the releasing of the instruments in a circuit being performed by a magnet in each instrument worked by a negative current on the 3<sup>d</sup> wire if the 3<sup>d</sup> wire should become detached or be 'down' the instrument would run all the paper out in order to prevent this the release lever A is put on a 'choc' B which moved sideways & round on its axis, when the line is open the lever A falls on to a 'worm' C which can be on the shaft shown or at D where it would stop the inst. quicker as C turns round it moves A sideways till it touches Rod E another view of Rod E is shown in Fig 2.

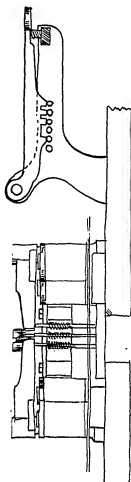
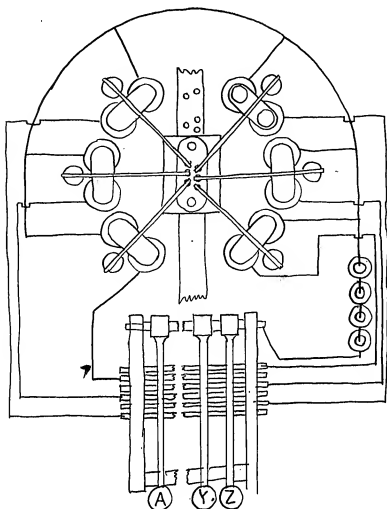
Another way of preventing this is shown in Fig 3 a wheel A is fixed on the slow shaft & has spiral grooves in the periphery in which the stylus C can drop when the magnet is open. The grooves could run out 50 or 100 words length of paper & then stop when the magnet is closed & springs back to its normal position. When the instrument is in good order & working the release magnet must be closed every 50 or 100 words as the case may be.

Chas. Batchelor



44

T A EDISON  
Perforators for Automatic Telegraphs  
141 775  
Patented August 12, 1873



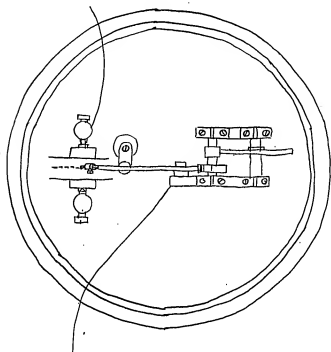
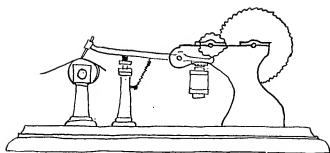


45

T A Edison

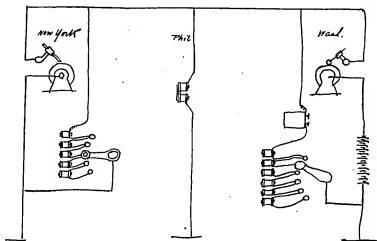
Rec Instrs for Chemical Tel.

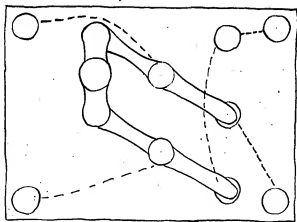
No 150.847 May 12 1874



Sketch.T A EDISON  
Chemical Telegraphs

147 313

Feb 10 1874  
Jan 29 1873 filedetc

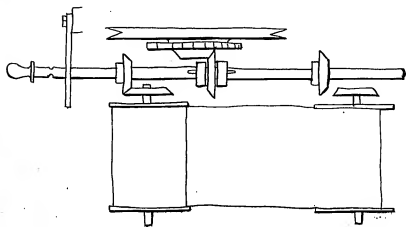
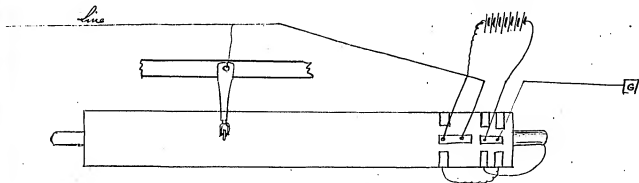
Current Routes

47.

Reversing arrangement for  
Horse character Private line printer

23

april 11, 1878



Rubber moving mechanism  
of  
Shoe & Hidden type writer

# Practical Solutions for Chemical Telegraphy

24

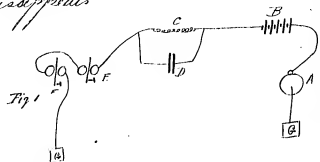
Pyrogallic Acid & Common Salt (W. C. H.).

Very good for short circuits it does not come out instantaneously but gets darker with time. Pyrogallic Acid being acted upon by light it is necessary to put in enough salt to counteract this as much as possible. The paper however will always be a little discolored. It is a brown mark on an almost white paper. I decided on this solution to run my Stock printer April 3<sup>rd</sup> 1875

Chas. Batchelor April 11<sup>th</sup> 1875

April 10<sup>th</sup> 1875 Batchelor's Printer

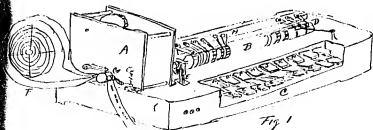
I find in working my printer that dots frequently drop out which is due to the induction of the relays in circuits so short a circuit. I can obviate this by increasing the resistance of the line & battery power so as to get the same amount of induction, the bad effect of which is not felt so much in a long distance. If now we shunt the resistance with a condenser the fault entirely disappears owing to the



Description of Edison's Dot & dash  
Morse line printer.

April 17<sup>th</sup> 1875

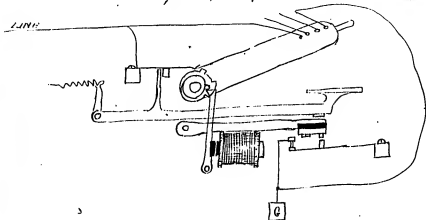
26



The object of the invention was to supply an cheap reliable instrument for private lines, those having type wheels being exceedingly dear & complicated. It works without switches is always ready to receive & is always on open circuit. It records on chemically prepared paper. The instrument consists of clockwork A a transmitting roller B composed of brass washers with the 'morse character' cut on the periphery. The contact springs H a keyboard C a reversing arrangement D a release E wheel is worked by a magnet under the base, a

paper roll 1 enclosed is an iron box in order to keep the paper moist, a receiving drum G in which rest a stylus of Bismuth.

Fig 2 shows the principle of the construction



April 27<sup>th</sup> 1875

Platina Solution

24

Water 1 Liter  
Pyrogallae acid 3 dwt  
Nitrate Strontia 17 dwt  
Salt 6 gr.  
Platina pen on H

Very good solution & permanent use  
on my printer & it is O.K.  
Johnson tried it last night & Phil & Wash  
& got writing as fast as he could turn

C B

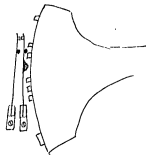
April 30<sup>th</sup> 1875

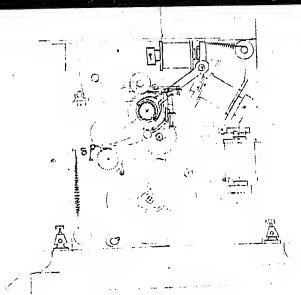
Copying Experiments

Aniline purple blue with Chrome Acid tried to copy  
with it but with no success. Lacquered a platina plate  
11x7x0.5 in it with a strong sol. of Cam. pat. which dissolved  
shellac & washed off. Could then take a great many copies  
with battery & sensitive paper but they are wrong side about.

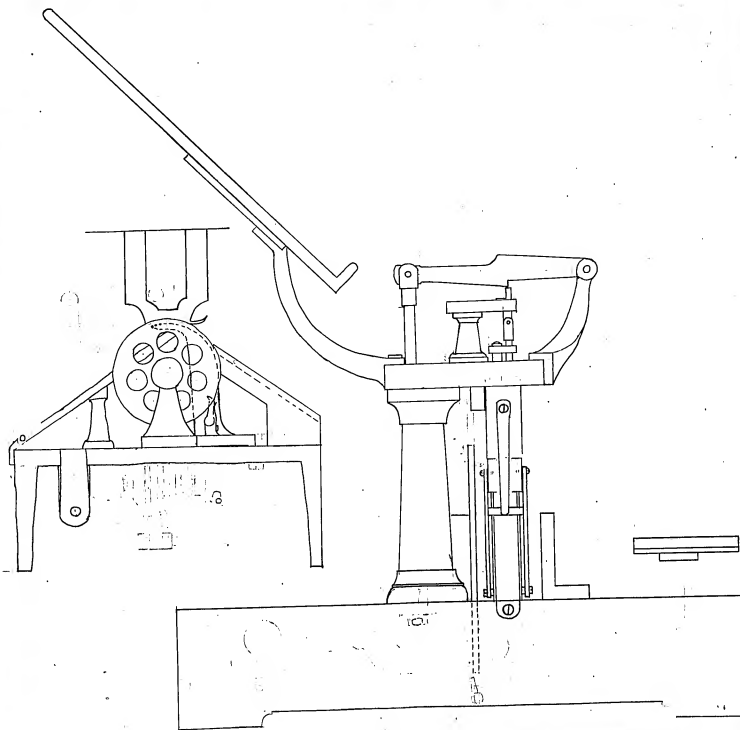
May 1<sup>st</sup> 1875

Roman letter receiver started running a Laboratory  
New style Domestic has taken by Birken, Spring  
& platina points washed of  
rollers. a good thing.



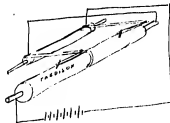






Sunday May 2 1895

Made machine with one pen like drawing. A long drum split in halves & insulated from each other. 2 Pens sliding together on an insulated rod, 1 on each drum. wrote with insulating ink on 1 drum & put sensitive paper on the other & moved the pens back & forth & forward quickly over them. The result was pretty good. Did it & got some off Hypo-jas sol. also Prussian blue paper & 16 whitened by the current - but the latter was not sensitive.



Took 100 Sample of static charge at 10 words per minute over the cable by shifting the condenser.

Used (Alcohol + H<sub>2</sub>O) Sulphuric Acid + Carb Soda for a new fire. No go.

May 3<sup>rd</sup> 1895

New Solution for Plat. pen  
Pyrogallie Acid  
Hydro Acid in excess  
Nitrate of Ammonia in excess  
Yellow marks on O turns reddish

Started our new Synchronous Morse instruments & worked all night on them. They gave readable messages from the first & worked fine. Did not try them for perfect synchronism as they gave us good codes without adjustment. True, some words would be all right for blotting. But we cannot blot Hypo. They are useless until we can find some method of erasing.

1890

The extra dose. Tellurium would do as it can be blotted out by <sup>Na</sup>Hyposulphate of Soda. but its difficulty to cast & work is quite a drawback.

May 5<sup>th</sup>

Worked all night on wire, found that  $B_2$  & Phosphoric acid blot the type marks.

May 6<sup>th</sup>

Antiseptic Acid added & type not make it white &

May 6<sup>th</sup>

Got a marks from Liberson on 11. Still with, fugitive, I tried instantly later with coloring matter but seems to persist it.  
Oleum & not common good but fugitive

May 7<sup>th</sup>

Worked all night  
Fixed up electron to graph up as at first had to go at 5 AM (Baby sick) but Edison & I got 200 words per minute

May 8<sup>th</sup>

Shurray got. Key of Domestic put Brown in there in charge for them.  
Alfred. Little on Domestic Box

May 12 1875 worked all night

Repeated through Electromagnet 800 words per minute perfect. Little  
find difficulty with it sometimes works & sometimes not  
Made some blue & common fire.

May 13 1875 New York Mr Clark & Blair

" 16 " Agreement verbal between Edison & Murray Murray taken  
up room & half next floor & to cellar.

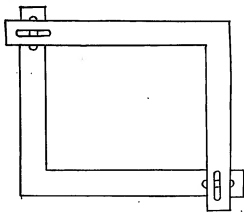
May 14 Moved machinery & so.

May 26 Wednesday Domestic started & took about \$3

27 Allen came at night & offered Edison 3 pages of matter if he  
would take Synthetic part of Operators  
I made Domestic Bill & June 1<sup>st</sup> 16.50. 21

May 29 Murray first surprise

Called down & was dead in office  
4 26 May printer set



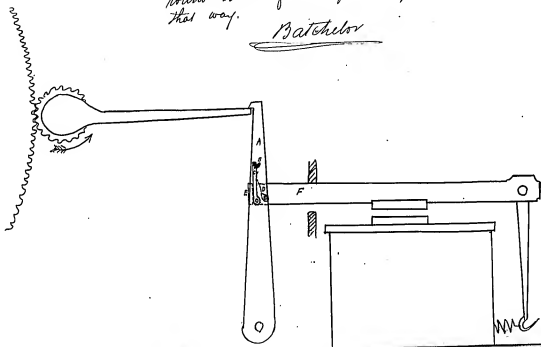
Aug. 8. 1845

Frame for letter on new copying press  
must be made like this so that it  
will give a little after the paper  
gets wet needles put in frame  
to put paper on instead of gumming  
Batchelor

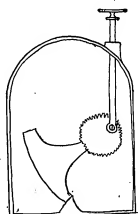
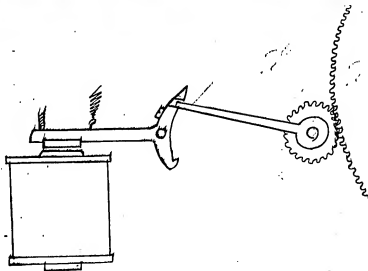
Aug. 4<sup>th</sup> 1845

Release movement for 2nd. Gony stroke  
when armature closes pawl & pushes clock away  
by cam is opened & a bit & return before the  
magnet opens when the magnet opens pawl & goes  
round back of B as flexible spring allow it to give  
that way.

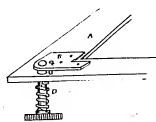
Batchelor



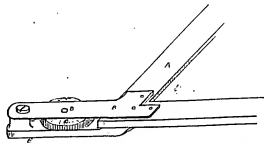
Aug 20<sup>th</sup> 1878  
 Stop & let off for Bell strikes  
 a Balchster



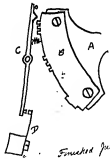
Sep 3<sup>rd</sup> 1878  
 Also movement  
 for signalling on  
 Domestic tel. Co.  
 Am. (and) present  
 July 23<sup>rd</sup> Chas. Balchster



Sep 3<sup>rd</sup> 1878  
 New clip for paper on  
 new press.  
 Chas. Balchster  
 A. paper frame  
 B. clip with 3 pins  
 C. spring  
 D. heavily button with  
 spring  
 Nov. Aug 12 1878



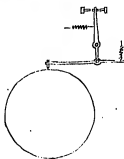
Sep 3 1878  
 Paper clip adaptation for new press for tele. press  
 A. Spring for use  
 B. Spring with pins in  
 C. Wheel with pins in  
 link which act on pen D. drawing of  
 Nov. Aug 13.  
 Chas. Balchster



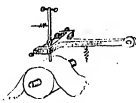
Sep 3 1878  
 New way of arranging  
 part a. both tel. & Am.  
 A. Reformer  
 B. Thin brass plate fast  
 on web 2 screws  
 C. Removable pin with  
 spring  
 D. Contact point  
 Chas. Balchster

Finished July 29

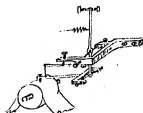
# SYNCHROMOTOGRAPH MOTIONS



Aug 12 1878  
F A BRIDGES



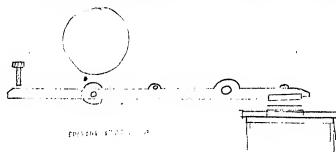
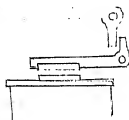
Aug 13 1878  
CHAS. BRIDGES



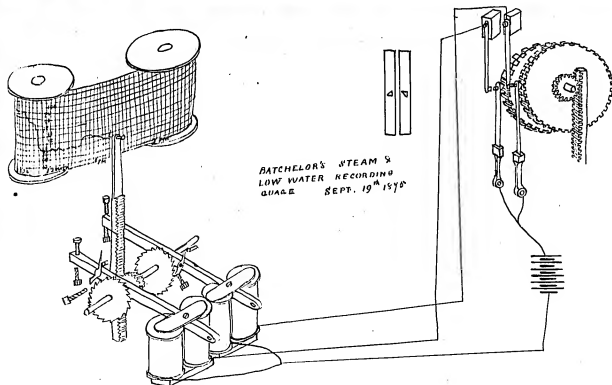
Aug 13 1878  
PARSONS

PRINTING LEVERS.

57

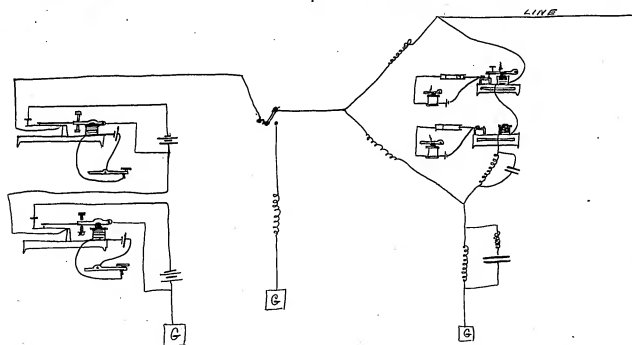




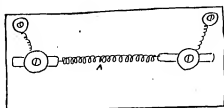


And P Battery Sep 64 7 15 PM





Edison's Telephone Circuit Nov 13 1875

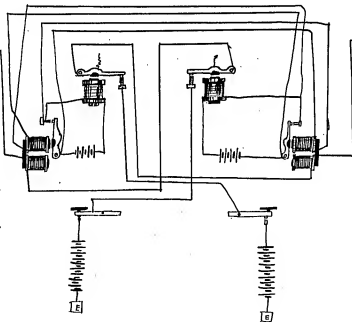


A German Edison Nov 17 1875

Acoustic telegraphy. Nov 15<sup>th</sup> 1875.  
Edison's idea the pair of tuning forks  
would make German edison spring &  
shake apart & give greater resistance  
& work on the difference  
Batchelor

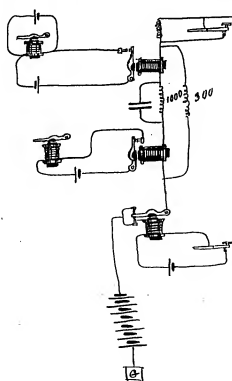
WEST

EAST



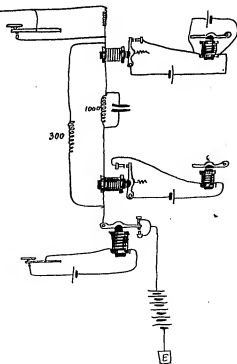
Edison's Automatic Repeater  
 Working but key sounders +  
 relay needed  
 C. Hatcher

Nov 18<sup>th</sup> 1876 Test. by Johnson



*Edison's Doubler.  
A New Quadrupler*

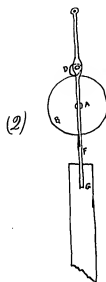
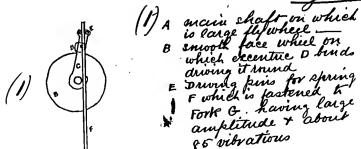
*Dec. 1895  
J. E. & C. A.*

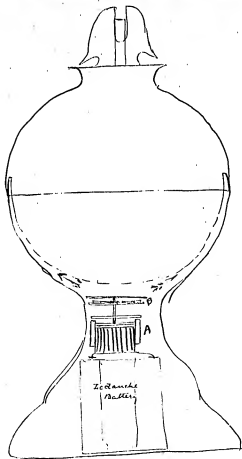


# Electrical Sewing Machine

October 16<sup>th</sup> 1946

## Driving apparatus.



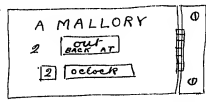
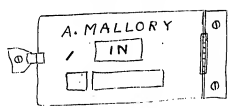


Lamp to burn Oxygen to  
without chimney. Oxygen to  
be supplied by electric Engine  
& Leclanché battery in bottom of  
stand. Engine A drives fan B sending  
currents of air round as indicated by  
arrows + battery directly on burner

Nov. 13<sup>th</sup> 1876  
Chas. Satchell.



# Office Door attachment

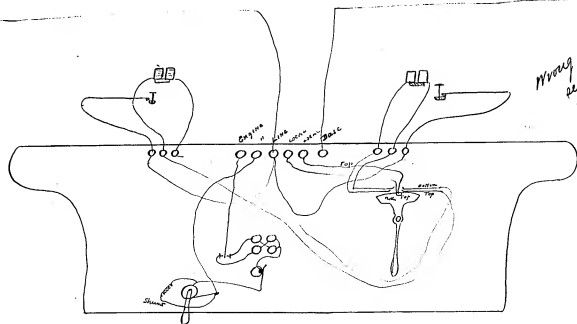


5  
1 In the plate shut against door showing card IN & all others blank these cards Fig 3 slide between two lugs on the plate the figures being given by the same arrangement or a circular card as in fig 4 When the plate is shut to the door it engages with a clasp 5 Fig 2 shows it moved. These could be got up in good style and put on office doors for about 50 cts. each

Wenlo Part Nov-16, 1896

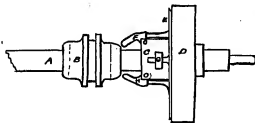
Charles Batchelor.



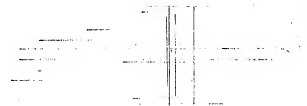
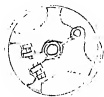


Connections for Edison Embossing Translator  
 now making (pres. sent) at J. D. Murray Newark Apr 3<sup>rd</sup> 1897  
Batchelor,

Friction Clutch, used on  
 Rath & Whitney Self feed screw  
 machine.  
 April 13<sup>th</sup> 1877.



- A Shaft
- B Slipper loose on shaft, on key way.
- C Large collar fast on shaft
- D Pulley
- E Cone on inside of Pulley
- F V H Cam Boss.
- G Guide for Cone.



N<sup>o</sup>.

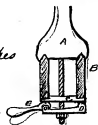
# Rod Clamp for Screw Machines.

Same on Pratt & Whitney  
Screw Machines



N<sup>o</sup> 2

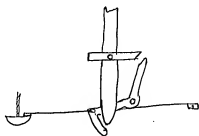
as used on Pons hand lathes



## Hand Rest Clamp.

- A Lath head or hand rest
- B Lath bed
- C Guide plate
- D Clamp plate
- E Cam for D

## Embosser Telegraph



June 24<sup>th</sup> 1844

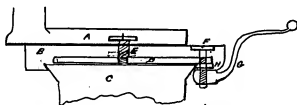
Charles A. B. at the helm

Movement for Embossing,  
point and translating  
point occupying the same  
place on plate

N<sup>o</sup>

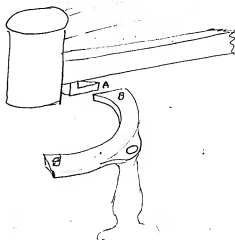
# Hand Rest Clamp.

As used on Washburn  
Hand looms.



- A Rest body
- B Carriage
- C Clamping plate
- D Screw in D and slides in A
- E Clamping collar, forced in D and C
- F Clamping handle
- H Rivetted washer

Edison's Embossing telegraph.



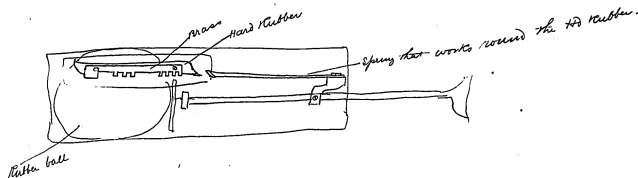
Sat. March 31<sup>st</sup> 1877

Chas. Batchelor

When the arm has got to the end of spiral on plate the lug<sup>A</sup> in bottom swing arm strikes plate B and will not pass until lowered to right distance. The arms cannot be put together again until it come back on to spiral

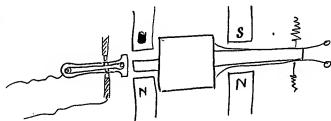
Unnunciator (Holt)

June 18<sup>th</sup> 1844  
Chas. Patchell

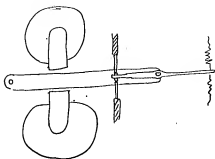


Brown & Allaway Relay  
 Telegraphic Journal  
 May 15 1874

June 18 1874  
 Chas. Batchelor



The arrangement is to procure the  
 make or break instances on the  
 slightest rise or fall of the  
 working current in cables etc.



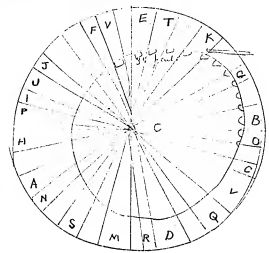
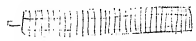
Edison's Embossing Translating telegraph  
— continuous roll for press work.)

July 4<sup>th</sup> 1874  
Chas. B. Atwater -

Cypher Machine

Nov. 24 1877  
Chas. Ketchum

66



26  
 10  
 9  
 3 5

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z 0 1 2 3 4 5 6 7 8 9 10 11 12



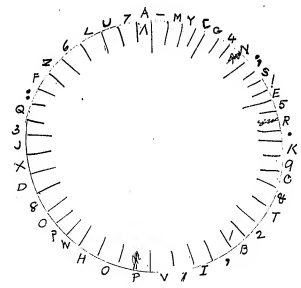
35 10 10



34

26  
15  
14

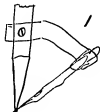
APM



Duplicating press

Method of making  
well as puncturing

ordinary writing attachment to write as  
Nov 26<sup>th</sup> Chas B. Satchel.



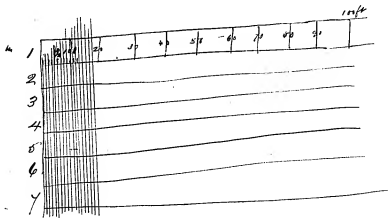
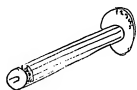
What I want when I go to N.Y.  
To see about Kitten Berts  
Sled, Dishes & Doll Heads  
~~Bedstead~~ Bedstead  
Work Baskets  
Something for Susan & Annie  
Something for Katie Head & P. Burt  
Something for Aunt Olivia  
Something for the Christmas tree  
Darning Needle

Lunter measuring machine

Dec 13<sup>th</sup> 1944

Chas. S. Satchel

67

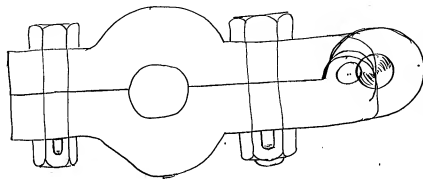
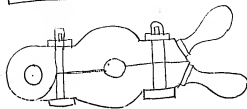
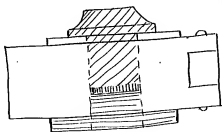
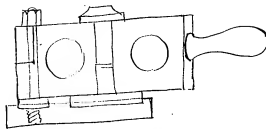
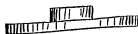
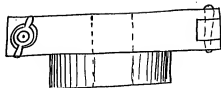
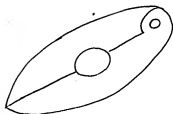


16  
7,800  
511

Mould for Plumbago Puffs for Telephone

Jan 9<sup>th</sup> 1898.

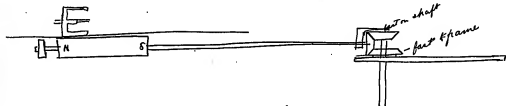
Chas. Patchin



Made this way

Velocipede Toy

Chas Batcher Jan 21<sup>st</sup> 1898



Magnet revolves round  
and wheel follows it:

# Speaking Telephone

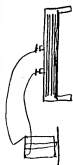
Chas Ratchella Feb 4 1875.

72

I conceive the idea that we can vary the resistance of the battery chiefly in making a telephone and this can be done with a high resistance one made of thin sheets of metal and a diaphragm to press it on so to give less resistance or it may be done with a very low resistance battery.

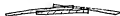
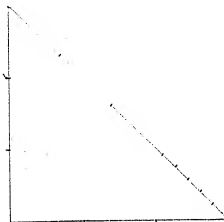
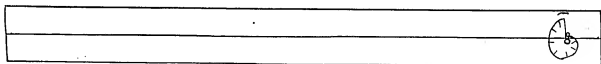
The preliminary experiments to try would be to find out whether by pressure you can alter the resistance of a battery made up like a voltaic pile.

This may be received from a magnet or a condenser.



It may be that the diaphragm may be made of gas or be the pole larger

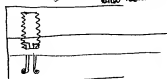
Copper pole or part of it and as you talk it makes the pole larger in surface & consequently alters resistance



REPLY - 10/10



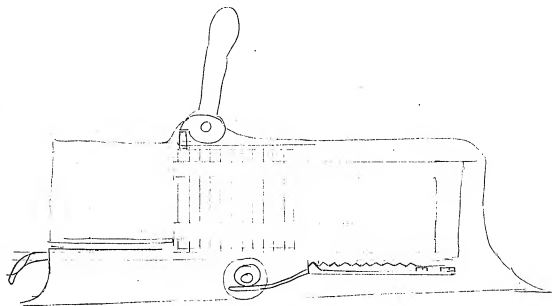
Nothing  
Outstanding  
Outstanding  
Outstanding  
Outstanding



Check punching Machine

Feb 16<sup>th</sup> 1945

74 88



462

1-1000-1000-1000



462.83



**Charles Batchelor Notebook, Cat. 1317**

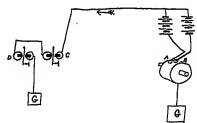
This notebook covers the period October 1875-September 1878. All of the entries are by Charles Batchelor. The name of his wife, Rosanna Batchelor, appears occasionally as a witness. The notes and drawings relate to telegraphy, etheric force, the telephone, the phonograph, the tasimeter, the electric pen, and the electric light. Most of the entries pertain to Edison's experiments, but some concern Batchelor's own ideas. The book contains 72 numbered pages.

Blank pages not filmed: 9, 72.

Missing page numbers: 1-8.

## (1) Quotation Printer

In working my printer I find considerable difficulty in dots dropping out & occasional sticking of the contact points. I think that the induced current having



so small a route cuts the signal off now. A & B are two relay pens which connect alternately with the drum through holes in the paper putting first a positive & then a negative pole to line

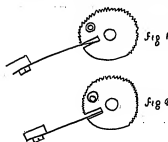
each of which currents move a separate polarized relay C or D. Suppose A works C & B D, now if B is sending a current the lever of D is drawn over, but the current also goes through C & directly B is out of the hole A is in & the counter currents from the magnets after the charge of B cuts off to a certain extent the charge of A. By putting 30 ohms resistance in each line or as you may say increasing the route for the induction current I was enabled to almost entirely obviate this. I worked it for several days & then left it for 12 days, I then started it up but it dropped dots & worked badly, altered the adjustment but no better altered battery as I thought that there was a possibility that it was not strong enough to go through 20 ohms & 30 ohms & overcome the permanent magnetism in the relays, but with no better result. I now find that the tongues were clogged up & one of the magnet wires was touching the wire & I sent it upstairs to clean. I use paper wetted with Pyrogallie Acid, Nitrate of Strontia & Salt & boil the solution after it is made in order to prevent black spots which occur in the paper when this precaution is not taken. I decompose with the pens connected to the zinc of the battery & when the battery is very strong there is a dark red substance forms between the platinum points connecting them together & spoiling the letters.

Oct 26<sup>th</sup> 1875

Chas. Batchelor  
Rosa Batchelor

## (2) Domestic Telegraphy

I find that the setting of the flat spring on the segment of the Domestic signal box has a great deal to do with plain & even signalling. When the segment is going up the



spring pin ought to be as in fig 1 when it is coming down it ought to be as in fig 2. It ought to be perfect - 4 yds at all times & not crumpled sideways or so large as to fill the slot in the wheel. I find it good to make the springs in fig 3 not

a little stronger & no 2 very weak but flexible. The teeth on the brass segment also must be made round on top to prevent any possibility of it sticking

Oct 20<sup>th</sup> 11 AM 1875

Chas. Batchelor  
Rosa Batchelor



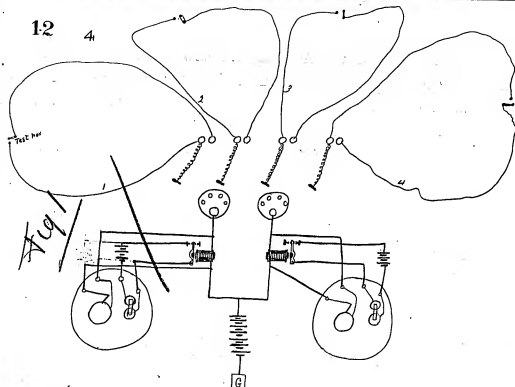
## 3 Domestic Telegraphy

I noticed a black oxide formed directly underneath the pen on the recorder & when the drum was cleaned with emery paper I found the nickel was off that particular spot. It seems to me that the nickel had either oxidized or combined with something in the paper. The solution was Pyrogallie Acid, Strontium Nitrate & Salt. Pen was Platinum, Drum brass nickel plated.

The small teeth in brass segment of signal box I make round on top to further prevent the segment sticking at any point.

Oct 28<sup>th</sup> 12 noon 1875

Chas. Batchelor  
Rosa Batchelor

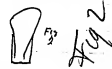


My design for working four circuits with two recorders on the Domestic telegraph Co. plan for Newark N.J.  
Sunday Oct. 31<sup>st</sup> 1895

Chas. Gatchelor  
Tom Batsheler

### 5 Turning Felt Rollers

On our autographic Press we have a roller six inches long which is made up of washers of felt cut from old hats; these washers are 1/2 inches in diameter. Have tried different ways of turning & grinding these rollers to make them true; the best as yet being to run the roller about



revolutions in the lathe then with a sliding tool made like Fig 1 + 2 run quickly across taking a moderate cut & then back again without altering the tool, then with a piece of coarse sand paper fattened to a straight flat piece of wood smooth off the top. The washers are screwed together so tight that you can just make a dent with your finger. If there are hard washers amongst the soft ones the hard ones after turning will always be lower than the soft ones but this in a great measure is remedied by the sand paper.

I tried grinding them off in the same manner that we grind off hardened steel mandrels in the lathe with an apparatus like Fig 3. A is the roller in the lathe running slow. B is an emery wheel running very fast in the same direction & fastened to the tool post of the lathe so that runs along the roller. Our wheels were not coarse enough they glazed directly & only seemed to lay down the fuzz. I think if we had a very coarse wheel it would do it as the sand paper smoothes them off so well. I tried running it off but this takes too long to bring them up true.

Nov. 2<sup>nd</sup> 1895 Y.M.

Chas. Batsheler  
Tom Batsheler

6

### Celluloid

Took an acid for peroxidizing the paper composed of:-

24 SO<sub>3</sub>  
6 NO<sub>5</sub>  
4 H<sub>2</sub>O.

I let it cool down to 140° F.

We now took brown tissue paper & cut it in strips & put in a flat dish in which there was a small quantity of acid & with two glass rods kept turning it & letting the air get into it until it was all wet, we then threw it in a large quantity of water & stirred violently at first to prevent heating & washed almost all the acid out & then neutralized with NH<sub>4</sub>, washed again & left to dry Sample No 1.

Our Sample No 2 was worked from the same paper & acid but instead of dipping the paper in the acid we made an apparatus for throwing the acid on the paper in fine spray. In turning over the paper stuck together very much & it appeared after washing as if it was carbonized inside & not out. No 3 We worked a lot of wood paper in the same manner as No 1, & No 4 We worked a lot of Oiled

tissue paper same as No 1, 5 was a lot of waste worked same as No 1, 6 was a lot of Sawdust that had been previously boiled in KO & dried which we put through the same process as No 1, None of the above 6 were soluble under the ordinary conditions but for No 1 we found the following solvents:

- Alcohol & Camphor with heat
- " " Oil of Watergreen with heat
- " " Acetone
- " " Oil of Myrsane & Sassafras with heat
- " " Iodide of Ammonium cold.
- " " Zinc chloride with heat
- " " Selenocyanide of Potash partial with heat
- " " Iodide of Sodium with heat

Nov 5<sup>th</sup> 1895Chas Batchelor  
Rea Batchelor

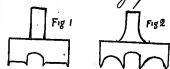
#### 4 Celluloid.

In experimenting with ~~acidified~~ paper we found that oil of sassafras will dissolve it in connection with alcohol cold equally as well as hot. Oil of Sassafras good solvent hot and cold. Oil of pennyroyal good solvent hot and cold.

Nov 6<sup>th</sup> 1895

Chas Batchelor

#### 5 Cloth & Felt Washer punch.



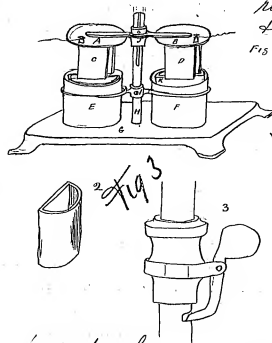
In making punches for cutting felt rollers ~~washers~~ they were very liable to break off around the rim when made like Fig 1 in hardening as the small quantity of metal in the rim cooled off is much quicker than the body. In order to obviate this I made one like Fig 2 bringing the steel gradually to a point. This seemed to harden all right & gave no trouble.

Nov 8<sup>th</sup> 1895Chas Batchelor  
Rea Batchelor

#### 9 Autographic Press Battery.

We have experienced a great deal of trouble in the battery for running the pen for our autographic press. Up to Oct 14 1895 we have used the French small Grenet battery 2 cells & each pen. They are however very unsuitable for a man's desk & our experiments have at last terminated in one to our entire satisfaction. It is easily cleaned & comes all apart, it cannot tip over, we use porous cells & the carbon & zinc can be lifted up.

A & B are circular disks of thick rubber which hold the zincs & carbons of cells E & F



which are glass & let into the iron base C about an inch. I is a spectacle secured to upright H & keeps the pen in proper position. J is a sliding bar which holds A & B & it is kept from turning on the shaft by a screw which runs in a groove in upright. The porous cell is D shaped as shown in 2. on the

back of J there is a click which drops in a slot across the upright when it is lifted up. This is better shown in Fig 3. Thus we found to be the only battery that would do for the purpose. & consequent-ly adopted it.

Nov 21<sup>st</sup> written. adopted. Oct 14 Chas Batchelor

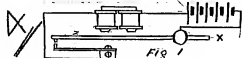
1895

(9) A New Force (?)

In experimenting with an electromagneto vibrator such as shown in Fig 1 Mr Edison & I noticed a tremendous spark passing between the cores & the vibrating rod  $z$ . This is a very common occurrence & often seen in relays etc & accounted for by saying it was caused by induction. This however was such an extraordinary spark that we thought there must be something else besides induction there. We found that by touching the end of rod  $x$  we could draw sparks from it in abundance. We fastened a screwdriver to the end of a glass rod 3 feet long & drew sparks from  $x$  with that. We connected a wire to  $x$  & carried it over to the stove 15 feet away & on rubbing the end of the wire on the stove we got brilliant sparks from it. We now connected  $x$  to the gas pipe & we could draw sparks with the blade of a knife from any part of the gaspipe in the room. A large body of metal was now placed within 15 inches of  $x$  & we then drew sparks from it although it had no connection with  $x$  other than the wood both were on. Mr Edison thinks this is a new force. It would not move a Bradley Gale. It had no taste. You can turn the wire back on itself & get a spark. Chas. Batchelor  
Nov 23<sup>rd</sup> 1895

10 A New Force

The following very curious experiment was tried. The vibrator at  $x$  was connected at  $x$  with the stove & also with the gas pipe notwithstanding this brilliant sparks could be drawn from the stove with a knife held in the hand. We now slipped a Bohm spool over the vibrator at



& connected the two ends to a Bradley Gale. It could get no deflection. We got sparks from all the bottles at  $x$ . We could not get sparks with Boron & Selenium. When taking sparks from  $x$  with Tellurium strong smell of garlic was observed. Chas. Batchelor  
Nov 23<sup>rd</sup> 1895

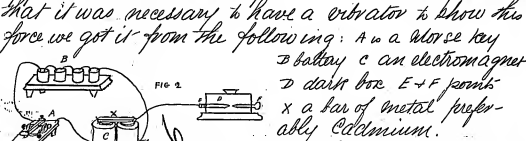
11 An Optical Delusion

When a vibrator is being made to give a spark rapidly a curious delusion may be seen. Imagine two fixed points  $A$  &  $C$  one on each side of  $B$  where the spark is & look quickly from one to the other directly through the point  $B$ . A row of small sparks will appear from  $B$  &  $C$  as you look toward  $A$  & from  $B$  &  $A$  as you look toward  $C$ . If you look across very quick the whole row from  $A$  &  $C$  will be seen. Chas. Batchelor.  
Nov 23 1895

12 A New Force

We succeeded in getting sparks over a wire running from Newark through New Brunswick to New York & back to Newark but it might be that the force travels across the table instead of going out on the line. We shunted the vibrator with a solen magnet & got no spark we suppose because the induction had a route to circulate in instead of forming a new force but when we shunted it with Bohm's we could get it. By moving the battery power from 8 to 12 cells we get a spark when the vibrator is shunted with 3 ohms. (The vibrator magnet is 6 ohms). With a glass rod 3 feet long well rubbed with a piece of silk (warmed) & a piece of carbon laid on to the end we got sparks into the carbon when held to the vibrator. Get the Simon

galvanometer, chemical paper the gold leaf electroscope would not be affected. A piece of ebonite held to the wire gave faint sparks. We made a box like Fig. 1 in order to observe the sparks it was composed of 2 graphite pencils inside a dark box with an aperture to look in at the top. We now found that it was necessary to have a vibrator to show the force we got it from the following: A is a Morse key



the sparks  
Nov 24<sup>th</sup> 1895

### A New Force

We made the following experiments with every instrument thoroughly insulated: The apparatus arranged as in Fig 2 Oct. 12:

In this case the core of our magnet was lengthened & a spool slipped on the two ends of the spool & the core was connected to the box & we got a weak spark. In Fig 2 the magnet is what we call closed by the piece of iron or armature over the top of the bar laid on this & connected to the points a fair spark may be obtained.

When the wire is connected to gaspipes at each side of box it makes no difference. With a piece of hard rubber 1 inch long as part of the circuit we got the sparks at intervals with 14 inches of glass in circuit have got sparks at intervals.

Lengthened the cores to  $\frac{1}{2}$  inches & then placed

cadmium bar on top & got the sparks brilliant. In Fig 3 the line passes through a delicate mirror galvanometer

to the gas pipe if there was the slightest amount of dynamic electricity on that line this instrument ought to detect it & yet when the points are connected to the other side of the galvanometer sparks can be seen though it will not deflect the needle in the slightest degree. With an Edison condenser in the line we get splendid sparks when both plates are in contact & weaker ones as they recede from each other. When both brass discs are 6 inches apart sparks can be got at intervals.

When the piece of cadmium formed part of the electric circuit & the line was taken from it no spark could be obtained.

A Magneto electric machine had both handles connected to the wire leading to the pencils & good sparks were drawn from it. When four magnets were connected together for quantity they gave a spark only equal to one spool. When 13 magnets are connected up for intensity we get a better spark than with one. When we place the cadmium on a single spool with iron core & of 400 ohms resistance & 4 inches long, we get an irregular spark. Connecting both ends of this magnet to the cadmium bar improves it so that it is almost as good as the 25 ohm spools we have used all along. These experiments were conducted by J. B. Collins

Nov. 26<sup>th</sup> 1895  
Newark N.J. USA

& Chas Batchelor

### 14. Etheric Force

Mr Edison & myself found that addition of battery in the electric circuit increased the volume of spark on the carbon points. We found that several persons could obtain sparks from the gas pipes at once, each spark apparently equal in volume to any single one. We found that if sparks were drawn off with the blade of a knife, placing the other hand on the gas pipe greatly reddened them. At the extreme end of the gas pipe in our laboratory sparks were being obtained, three feet from this place the pipe was grasped by the hand & the sparks consequently reduced, water was now poured on the floor where the person stood who grasped the pipe & a large piece of iron placed on the wet floor & connected to the pipe with copper wire this did not diminish the sparks at all, & the man now stood on the wet floor & grasped the pipe but the sparks still were just as good, This seems very paradoxical it would seem to be reduced by the current running to ground through the human body yet when you put better conditions for it doing so it apparently would not pass at all.

A person taking hold of the wire from the cadmium & with a piece of wire or metal in the other hand touching any piece of metal can get a spark showing that it passes through the human body.

Again three persons standing on blocks of paraffin & joining hands, the end of the wire held by the first man the third one could draw sparks from the stove with a knife in hand showing that it would pass directly through 3 human bodies although the spark was diminished a little.

Nov. 30 1875 Newark N.J.

Chas. Batchelor

### 15. Etheric Force

Mr Edison myself found that it was not necessary even to have a magnet or to use a cadmium bar as it could be obtained with almost any metal with just a spool of wire.

We have got sparks when the electric circuit had 1000 ohms resistance in, & when there was no iron in spools & the spools connected so as to give the least amount of magnetism.

We now passed it through the scrotum of a frog leg but got no indication of a current although we got sparks through it & frog was tested for delicacy.

Used to put the induction spark over the same amount of glass that the etheric has gone over but without avail & we found that the etheric current would travel through a great many times more space than an induction current giving a spark.

About sixty chemicals were tried to see if we could get etherochemical decomposition but without avail.

Chas. Batchelor

Dec 3 1875 Newark N.J.

### 16. Acoustic Telegraph

Mr Edison proposed some time ago that the study of acoustic telegraphy would be remunerative as it seemed to be very difficult to make practical the inventions of Gray & others so we have worked this up & intend to follow it for some result. Our experiments so far have been confined to reeds of Swiss steel but have had a pair of tuning forks made giving 256 vibrations per minute & resonant boxes for them. These we placed on bases as in Fig 1 & the first principle we have tried to work was direct, entirely stopping the transmitting fork which would not work well

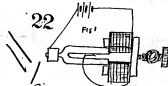
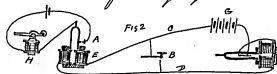


Fig 1 is the transmitter it differs only from the receiver in that the receiver has its contact outside the fork. W. Edison hit a very good idea for working the sounder in place of closing the local circuit whilst the fork is vibrating which is only a series of very quick contacts he does it in



the following manner  
F is the transmitting magnet, B key, E receiving

magnet, A repeating points, H sounder. In this case when key B is open magnet E works & vibrates fork opening & closing sounder circuit so fast that the induction from spool will not let it close but when B is closed it short circuits main battery & the points A stop on closed circuit working sounder. This works very well.

Dec 3 1875 Newark N.J.

Chas. Batchelor

#### 14. Ethereic Force

The galvanic etheric frog was again the subject of experiment as Dr Beard had said that he had got contractions of the legs from etheric current, we now insulated every thing on 6 inch bottles & put the frog on an inverted taster.

When the wires were placed to the frog slight contractions were noticed showing the appearance of electricity which seemed impenetrable from the high insulation. Dr Beard thought that from the way in which the legs contracted that they gave movements both of opening & closing the circuit. In order to test this the wires from battery were taken off the self vibrator & a Morse key placed in its stead using the magnet with it. The etheric spark was tested & found good & then the wires were connected to the nose & leg of the frog. But upon working the

key no movement of any kind could be discerned although we got spark through it. The idea occurred to W. Edison that the movement of the frog was due to mechanical vibrations from the vibrator passing through the wires irritated the nerves of the frog. The battery key magnet was now dispensed with & it was found that a tuning fork during vibration touching the end of the wire attached to frog would affect it every time. In fact a tuning fork brought within an inch of frog, when vibrating made a sensible twitching of the legs.

Dec 5 1875 Newark N.J.

Chas. Batchelor

#### 18. Ethereic Force

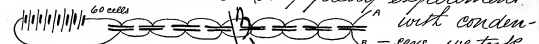
We run wires out in the street in the rain & lay them in the gutter & at the other end got the spark, it seems as if you cannot ground it.

Dec 6<sup>th</sup> 1875

Chas. Batchelor

#### 19. Condensers

Edison & I made a very pretty experiment

 with condenser, we took 60 cells of battery & 8 condensers about 25 microfarads & connected them as in figure. We then connected A to the gas pipe & held the other end B in the hand. When the condensers were discharged by touching the gas cock with B a most beautiful spark was observed which spread out about 4 inches across, each spark seemed to be made up of a series of straight lines radiating from the centre & each ending in a peculiar ping shaped end or point. Although there was such a brilliant spark when the two wires were held in the hands & touched together to discharge them the shock felt



was very small indeed. Cha' Batchelor  
Dec 11<sup>th</sup> 1898

20

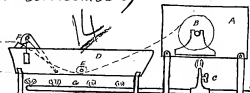
### Etheric Force

Mr Edison, J. & Dr Beard went to the Stevens Institute of Technology to try some experiments. We found we could not use their large electro-magnet as it took 3 seconds before it got its full charge. Their electro-scope was out of order & we could not use it. We got the spherical vacuum of 3 inches in length. Could not get it through a perfect vacuum.  
Dec 14<sup>th</sup> 1898 Cha' Batchelor

21

### Condensers

Having occasion to make 24 condensers we used for the first time an apparatus made last January for the same purpose but not used then it consisted of:



A is an open kept about 180° Fahr. B is the roll of paper, D is the trough for paraffin. E is a roller under which the paper passes, F is the strip for taking off the surplus paraffin. G is the gas jets which keep the paraffin hot. The principle is to take the paper till it gives up its moisture & then directly drag it through hot paraffin & draw it out along a board about 3 feet long holding it above board until it has cooled & then chopping it in it. The board is marked where to cut the paper into sheets. As it passes under the rubber F it strips it beautifully leaving a perfectly even thickness. It more than answers our expectations.  
Dec 20<sup>th</sup> 1898 Newark N.J. Cha' Batchelor

22

### Etheric Force

A curious experiment was tried this evening, it consisted in getting the etheric spark after it

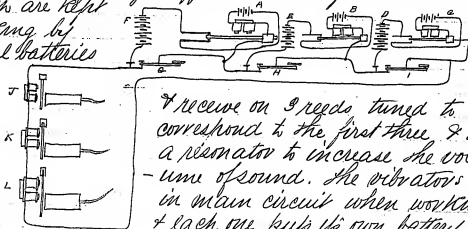


had passed over in one case four feet, & in two cases two feet of air. A is the vibrator or generator x the point at which the etheric is called off, B C D & E are 12 x 8 sheets of tin foil suitably hung from insulating stands, B C are 24 inches apart, C & D are 48 inches apart, D & E are 26 inches apart, a wire is connected from E to one point in box F, the other point being connected to ground by gas pipe. Notwithstanding the air space between the tin foil sparks could be got in box F though they were at intervals.  
Dec. 26<sup>th</sup> 1898 Cha' Batchelor

23

### Acoustic Telegraphy

We have at last been able to receive three messages in the same direction on the following plan conceived by Edison. We send with three reeds giving different rates of vibrations which are kept working by local batteries



I receive on 3 reeds tuned to correspond to the first three. I use a resonator to increase the volume of sound. The vibrators are in main circuit when working & each one puts its own battery in.  
A B C are the vibrators & batteries (local), D E F are main batteries, one for each & H I are subkeyes J K L are the receivers with reed and subkey attached for in-

-creasing the volume of sound. We have experienced a great difficulty from the fact that when you are working with a single battery & the vibrator of one transmitter is working between two points a & b in Fig 2 & you suddenly put on another vibrator the first one will tend to change the place of its extreme points so that it is working between c & d instead of a & b. This is entirely obviated when each vibrator throws in its own battery.

Dec 26<sup>th</sup> 1895

Edw B. Atchelor

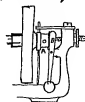
24

Autographic Pen

We made a great improvement in the pen by giving the cam plenty of side shake and putting a guide above the cam A so that it could only move the needle up and down and not at all sideways. The spring is also improved by being made stiffer at the point so that it hardly springs at all between the platinum point and the end of spring.

February 7<sup>th</sup> 1896

Edw B. Atchelor

Addressing Newspapers.

I have just thought out a new method of addressing newspapers. Take a long strip of parchment paper and write all the subscriber's names one after the other:— thus:—

John Smith  
High Bridge  
N. J.

Charles Harrison  
Horsenville  
N. J.

Feb. 16 1 year 1896

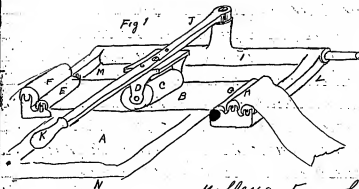
Mar 10 1 year 1896

with the 'Electrical pen'. This strip of punctured paper goes into a machine designed to feed it along at given times the length of one name. The wrapper is put on a table under with the stencil & by a movement of a lever down the paper is fed, the stencil comes down, and a roller comes down on the stencil; and, by a lateral movement of same lever, the fac-simile copy is made. In lifting the lever a way roller, stencil, and every thing comes clear & the paper can be moved and another put on.

Fig 1 shows a rough sketch of the principle by hand.

A is the wrapper on the bed plate. N, B is the stencil. C the roller. D the roller frame. E & G the holding

rollers. F is the feeding roller. I is the body of lifter. J is the lever or the handle.



It probably would be a great deal better to have the paper and rollers on an independent frame from the lifters and the arms so arranged as to fit in slots when lifting them up, & when the carriage is let down it fits in slots in the bed plate so that it cannot move or get out of place.

The feeding arrangement can be furnished automatically by weight or by the lift of the lever.

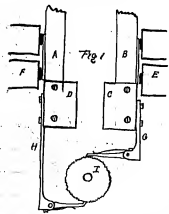
I have explained the manner of doing this by hand because I think it may be more practical at first in country offices but it can also be done automatically, feeding itself with paper and printing the names at a more rapid rate than can ever be done by hand.

August 21<sup>st</sup> 1896 Charles Batchelor.  
Knox Batchelor

### 26. Electric Sewing Machine

In experimenting with large tuning forks we found that more power could be got out of a magnet by means of them than by any other means. We resolved to apply them to the driving of sewing machines.

We took a reverb fork of bellmetal with  $\frac{3}{4}$  inch prongs and carrying 24 weight on each prong & fitted an attachment to it as shown in fig 1.-



A & B are the 2 prongs of the fork  
C & D are the movable weights E & F  
the driving magnets, G & H are 2  
arms extending from prongs and  
carrying driving clicks for ratchet  
wheel & shaft I. On same shaft as  
ratchet I we put a 20 lb fly wheel  
and drove a Nelson & Billo machine  
from it. The ratchet I has 300 teeth  
& the fork gave about 60 vibrations

per second. We succeeded in driving the machine at the rate of 52 stitches per second minute through six thicknesses of shirting with 4 ordinary cells of Bunsen battery. This of course is nothing very great but it convinced us that the apparent great strength of a tuning fork when vibrated by a magnet can be utilized if you only strike the right way of applying it. In fig 1 the click H is much farther from the fork than G and consequently the prong A has much more work to do than B; this throws the fork out of time (when it is very weak and will do no work at all) but by moving the weights on prongs they can be brought into time and all maximum strength of the fork is gained when both prongs are exactly in time. I have now commenced on a large fork which I think will give us a surplus of power.

Oct 22<sup>nd</sup> 1896.

Charles Batchelor  
Mento Park N.J.

### Door plate register

I have devised a very simple means and cheap which when placed on a door & you leave the room informs visitors whether you are in or out and also what time you will return.

Device for fastening paper together  
I have just thought of a means by which a lot of papers etc can be fastened together by one simple movement of a lever something like what is used on a hand stamp either by eye-letting or by putting through a double gauge and opening out the ends. It could be done probably easier by means of two levers one to punch the hole and the other to place the cycle in & close it up the whole to take up about as much room as an ordinary hand stamp. It would have to feed the cycles automatically which I think is a simple thing to design. It might be so arranged that the up movement of the lever would punch the hole while the downward motion would put in the cycle & close it up.

Meads Park, N.J.

Nov 21<sup>st</sup> 1896

Chas Batchelor

Rosa Batchelor

### Duplicating Ink

About Dec 1<sup>st</sup> 1896 Edison devised with our help the following compound of ingredients to form a duplicating. And we now find that it will do more than any other known. You can take a copy on the letter press way from such copy you can take copies on letter or other paper & the number is so good and altogether about 20 paper copies can be made from the original.

The following formula is what we consider best:-  
 5 lb 50 Ameline rider } Standard coloring  
 4 lb Gall. Water } solution  
 2 1/2 lb Alcohol } No 1  
 20 lb Gall. Hot Water } No 2 Standard body  
 2 1/2 lb Gum Decolme } solution  
 One part by measure of No 1 to every four parts of No 2. No 2 stored well before bottling.

A copy can be taken from a letter press copy at any future time  
Dec 15<sup>th</sup> 1896.

Chas Batchelor

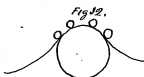
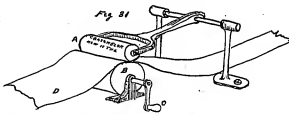
### Edison's Autographic Power Press.

I made a machine like sketch to prove the practicability of working on a rotatory press.

The stencil is fastened on the felt roller A by lapping it round and is held tight by bands on the end. The roller B is turned by handle C and at each revolution of A a copy is left on the endless band D. This worked well but wanted great pressure and we now think that the stencil ought to be placed on roller B and to have three or four rollers placed like Fig 32.

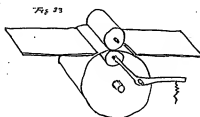
with considerable pressure on them this being the same as rolling over the stencil four times.

Chas Batchelor



Jan 14<sup>th</sup> 1897

### Edison's Autographic Power Press.



Our next endeavour was to turn a cylinder and cut a piece from the surface so that the stencil could be fastened to it (as in Fig 33) and have a roller running on top which acts in place of a press bed and the int roller placed inside which when not running on the stencil is distributing on the inside surface of the cylinder.

We got four results from this device, the paper was fed by two springs fastened on the cylinder which were lifted at the right time by the cam on the feed plate and after raising & running out and falling back in position it came down on the paper and held it tight on to the cylinder this device

shown better in Fig 34. It was completed January 1877

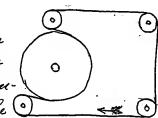
Fig 34



We next devised the means thus -  
We used an endless band running as in

Fig 35 over the cylinder A

Fig 35



and the four rollers BC  
DE. Each roller runs  
on the outside of the cy-  
linder and are indepen-

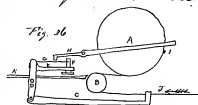
dent of each other. The stopper I turns the  
paper over the top band which it travels  
along depositing over the end of machine. This plan we  
have concluded is so far the best we are using rubber cloth  
as a band. we have tried brass and copper sheet

Feb 1<sup>st</sup> 1877.

### Automatic Feed for Autographic Rotary Press.

We considered that the press would be of very little  
consequence without a self feed and therefore put on  
the one shown in Fig 36

Fig 36



A is the cylinder B the feed roller  
C the feed lever. E picks up the paper  
H is a lever moved down by the pen  
I on the band. As the band

moves in the direction of the arrow projections on its sides  
move the lever C and another on the other side and  
give the lever D one movement backward and forward  
for every revolution of the band. F is a pin held up  
by the spring G off the paper, this pin is furnished  
with a piece of rubber on its end which is heated occa-  
sionally to make it adhere to the paper. The pen I on  
the left moves the lever H down in to the spring G and  
thrusts pressing the rubber on to the paper it lifts one  
sheet up and waits till lever C carries it over to the drum  
A and takes it round. This works admirably.

Feb 2<sup>nd</sup> 1877.

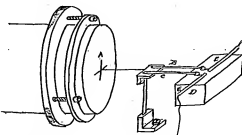
### Speaking Telegraph.

Oct 19<sup>th</sup> 1877

Edison thought that the speaking tele-  
graph of Bell was very imperfect, seeing that it could  
only be used on very short lines, and he maintained that  
if we could by any means get the resistance of the circuit  
increased and decreased by the raising or lowering of your  
voice, it could be used on long lines.

I therefore made two instruments, a transmitter and  
receiver. The principle of the transmitter was to make  
the vibration of a membrane work a roller along a  
hard pencil mark or other high resistance, altering the  
resistance of the circuit every time the membrane is  
vibrated.

Fig 37



This was done in the following manner:-  
as shown in Fig 37 A is the  
membrane. B & C are fine springs  
with Platinum springs or  
rollers on their end. E & F are  
two pieces of metal used as  
connections. The lead pencil  
was rubbed on stone D between  
the rollers and the connecting

pieces E & F. This however did not give us the desired  
result as all we could get was a mumbling  
sound.

Another plan we tried was a band across the  
diaphragm with projecting pins which operated on  
the springs B Fig 38. The idea being to get the



38

articulation by cutting out or put-  
ting in resistance. Our receiver for  
these instruments was merely a  
sketched diaphragm with an arma-  
ture on the centre and a magnet  
adjustable to it as in fig 39.

Our next transmitter was a disc of  
black lead in front (and adjustable) of  
the diaphragm. This has been so  
far good. We have used a hard

rubber diaphragm covered with blacklead. as the diaphragm vibrates it touches in more places and reduces the resistance. With this apparatus we have already been able to distinguish clearly known sentences well between New York and New York.

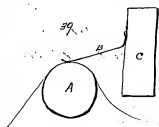
### Speaking Telegraph.

March 15<sup>th</sup> 1877

We made a transmitter in which the diaphragm struck against two @ discs of Plumbago fastened to springs this seemed a little better.

We also found that the words appeared plainer when received on a reel fastened at both ends & which was attached a sounding tube.

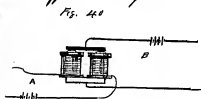
We also find that the best way to receive and hear the words is on the Electromagnet principle in which the current is passed through a spring B during the time it is pressing on a strip of chemically prepared paper carried along by the drum A C is a resonant box to increase the effect.



### Chemical Repeating Magnet

April 16<sup>th</sup> 1877

Edison made a relay on the principle of the difference of resistance on Plumbago when under pressure of different degrees. By placing a magnet (black) as



in Fig 4 and placing the small coils of Plumbago on the cores and letting the armature rest on these.

When circuit A is open the armature does not press down and consequently circuit B is such a resistance that it is practically open, but when A is closed the magnet pulls the armature down with force, and the circuit B is worked with a force that is at all times regulated by the circuit A.

### Action of Chemicals under Pressure. April 29<sup>th</sup> 1877

Benzoin Acid when pressed in a die one inch in diameter comes out a beautiful white hard substance like ivory but does not cut with a knife.

Protioxide of Iron makes a solid mass exceeding by porous so much so that when you place your tongue on it, it comes off with difficulty. Its reddish in color. Sesquioxide of Iron also acts the same.

Benzoate of Soda is very like Benzoin Acid but not quite so hard.

Salicylic Acid is white and very like ivory.

Gum Damar makes a very hard lump and compact it is grey.

Gum Damar and Kadon make a very compact hard lump like very hard clay almost white and very porous.

Gum Damar and Camphor mix pretty well but the difficulty of powdering camphor renders it difficult for them to mix completely.

Sulphur of Antimony makes a cake which breaks off in cakes very brittle (black).

Argols squeezes up into a compact mass.

Plaster of Paris and Camphor in alcohol presses up into a solid hard mass.

Letter Copying.June 30<sup>th</sup> 1894

Arsenic Acid when written with upon paper raises up the writing very much, sufficient to be felt by the fingers. It also eats away or dissolves the paper so that you can take copies from the writing by rolling an inked roller over it with paper underneath.

When writing a slightly dampened sheet should be placed underneath the paper.

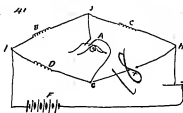
New Composition.May 5<sup>th</sup> 1894

When alcohol and camphor are dissolved in alcohol and then sulphur mixed intimately in the solution with continual stirring and this solution suddenly precipitated with water you have in this precipitate a peculiar leathery substance.

June 1<sup>st</sup> 1894

When grinding a lathe tool at the stone I noticed that when it jammed and produced a high note the hand holding the other end of the tool perceived a sensation of burning whilst the hand between felt no heat at all. I think however that the heat is due to the rubbing of the steel by rapid vibrations on the skin of the hand.

## Induction of magnets

June 6<sup>th</sup> 1874

In the diagram "A" is a drum carrying chemical paper (probably Edison's solution of Ferricyanide of Potassium and Salt as it is exceedingly sensitive and permanent). B, C, D are resistances in three sides of a Wheatstone bridge and D being equal and of high resistance and C being equal to it the magnet to be tested which is placed at X. E is a Morse key and F is battery. If X were plain resistance there would be no mark on either pen on opening or closing E, the bridge being balanced, but being a magnet it sets up a current which oscillates in circuit H.T.C. unbalancing the main current and obliging a part of it equal in volume to itself to pass through the bridge wire, in doing so it leaves its mark (either positive or negative) on one or other pen. On closing the key the magnet discharges in the same circuit H.T.C. but in the opposite direction and leaves its direct mark on the other pen.

Thus with this device we have on closing, a mark produced by the exact equivalent of the current set up by the magnet and on opening we have the same magnet's direct mark for its own discharge.

These marks have peculiarities which determine for us distinctly the action of magnet during their charge and discharge. Thus when an ordinary relay is put in at X and the core adjusted to touch the armature the closing of key or charging of magnet will give a mark like A and on opening one like B.

A B

142

149

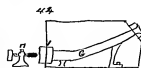
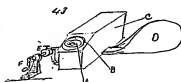
C D C D

Now when the armature is adjusted a little away from the core there is not so much difference in the marks. And when the armature is entirely away the marks come equal for both opening and closing as at C, D, 143, 142.

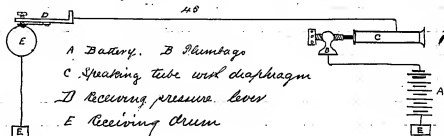
## Speaking Telegraph

Mans. June 6<sup>th</sup> 1874

Our Speaking telegraph as now improved is far plainer and better than Bells. The apparatus at present consists of a speaker a receiver and a Morse key and sounder.



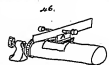
The speaker is shown in fig. 42 and consists of a bent tube having a mouthpiece at one end and an adjustable diaphragm at the other. This diaphragm when set in motion by a person speaking in the end of tube strikes against the point of adjusting post H. This point is made of compressed plumbago and isinglass which has the property of altering the resistance of circuit when pressed with variable strength, as is done by the diaphragm when vibrated by talking. This variable resistance in our circuit gives us the articulation of the words. Our receiver is a special form of Edison's Electro-magnetograph, the stylus being fixed to a resonant box. The arrangement of our circuit is this:-



In the receiving end we find yet that Sulphate of Soda is the best solution to work with. He found that this tube does not give us such sounds as are accompanied by stress of air such as P, B, Sh, K, etc. and for this we have devised a new attachment as we believe that the stress of air



carries the diaphragm forward and holds it from vibrating freely. Our means for getting these sh & t



The vibrations is shown in 46 we cut a hole in the top of tube and put a pair of lips over it as at A above this and immediately between we stretch a piece of rubber or parchment or copper foil, when talking in the tube all notes that have a stress of air with them come up through the lips and vibrate the blade of copper like blowing in the edge of a blade of grass and the other sounds will not affect it by this means we got good results.

Chas Batchelor

### Speaking telegraph

June 17<sup>th</sup> 1874

We found now that combinations of Plumbago and Rubber and Plumbago and Caustic Magnesia amongst many others are the best for telephones

Chas Batchelor.

### Reproduction of copies

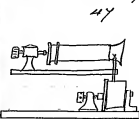
July 11<sup>th</sup> 1874

After vainly searching for a long time to find a process that shall be easier to work than Lecoq's paperograph we have at last found a process. Take an ordinary sheet of writing paper and cover it with Collodion now take a stylus and write upon letter with it this either breaks the surface of the Collodion or cuts off a portion (we think the former) this sheet can now be used as a stencil and copies can be taken from it immediately. We find that Balsam Peru and Asphaltum Thinned answers better to prepare the paper with.

### Speaking Telegraph

July 31<sup>st</sup> 1874

We find that our apparatus for getting the sh, th, and s, is not perfect and in experimenting we find that these sounds will vibrate a diaphragm when spoken across a tube same as speaking across the mouth of a bottle, so we constructed a speaker on this principle as shown



in Fig 47 when you speak in the top tube you speak across the tube x and all 'singing' sounds vibrate the lower diaphragm and make the talking more perfect.

We now began to experiment on different diaphragms and we have made them of iron, steel, german silver, brass, mica, soft rubber, hard rubber, paper, card, collodionized paper and many other material. We have had different kinds of springs on them some of which are shown below the best of which we find is shown at

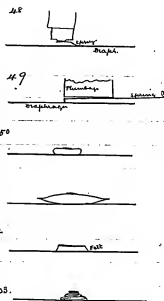


Fig 50 this must be made very delicate so that the diaphragm vibrates independent of we have done some excellent work with this.

We have now done away with the 'rel' tube and speak now in one tube the diaphragm being made to respond to the 'rel' sound by cutting a slot in the mouth piece so that these sounds strike on the edge.

The stress of air passing down and out - but causing a vibration which makes the diaphragm to respond.

Up to the present date we have used solid plumbago.

compositions but we find by testing in a galvanometer we find that we don't get the amount of variation in the resistance we require by slight pressure. Having found that we must not break the circuit but work entirely on differences of resistances as this stops all outside noises, buckles etc. We take fine wool and rub it in plumbago and press into a small cap which of course is springy when this is put in between the spring in diaphragm and platinum face of adjusting screw the talking is absolutely perfect and with this device I can and have taken a message of about 75 words through 1000 times perfectly without breaking of matter taken at random out of the newspaper. The plumbago is a little liable to shake out and consequently to deteriorate but we could make a band of it and continually expose a new place.

Chas Batchelor

### Shop Gas pipe Telephone

July 31<sup>st</sup> 1894

We find that by putting a diaphragm on the gas pipe in a shop conversation can be carried on from one floor to another without in any way injuring or affecting the working of the gas. It will not go through the meter.

Chas Batchelor

### Speaking Telegraph.

Aug 4<sup>th</sup> 1894

The speaking telegraph as now made by us and being made by Murray of Newark is shown in the following sketch

### Speaking Telegraph.

Aug. 10<sup>th</sup> 1894

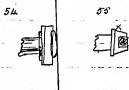
We find that with our transmitting apparatus and a magnet before a diaphragm for a receiver (a plan we frequently tried in the early stage of our experiments) we get splendid talking but lose. It is however preferred by Mr. Schick of Pittsburgh who has given it a very thorough test. I made two pairs and today we tried it between 197 Broadway and the Clearing house in New York when Mr. Camp and several other gentlemen operated on it.

Chas Batchelor

### Speaking Telegraph

Aug 20<sup>th</sup> 1894

I finished today and shewell work Edison & Mr. Otis two pairs of our new speaking telegraphs. The transmitting apparatus is improved by coating with fibre with plumbago (thoroughly) and placing a wad or twist of this material between the spring and the platinum adjustable face. It is exceedingly delicate in regard to altering the resistance of circuit by the slightest pressure.



In order to keep this 'fluff' from falling out it is enclosed by a hard rubber piece as in fig. 55 at x.

This 'fluff' has considerable resistance and therefore when not talking we cut out this by a switch. The transmitter is put on a stand as in fig. 56

as also the receiver which is improved by putting a piece of rubber between the diaphragm and frame of magnet which dampens and kills continuous noises.



## Speaking Telegraph.

Aug 24<sup>th</sup> 1894

Made and showed at 171 Broadway ten pair of our new Speaking telegraph instruments made with handles as in Fig 57 of flexible cord running through the handle. The receiver R is a magnet set in cup and a loose piece of slate tin laid on top fastened from falling off as in Fig 58

Sept 1<sup>st</sup> 1894

Finished today a pair of Speaking telegraph instruments made with flat handles at right angles to the axes of barrel part of above instruments.

Sept 6<sup>th</sup> 1894.

Having a little trouble from the plumbago shaking out of our wads or fluffs we desired to use Silvered silk instead and as the method generally known (that of saturating material in Nitrate of Silver and reducing silver by rotating over Phosphorous dissolved in Be Sulphide of Carbon) is difficult and dangerous we found that fresh phosphide of Calcium dampened giving off fumes of Phosphoretted Hydrogen would reduce the silver very quick.

The silk so prepared however when used in the Telephone gave noises which we could only account for as the action of the current in the dilute silk in the silk.

I have noticed that on telephone in places where there are a great many wires on the poles works better in wet weather than in fine weather. Says this is decided as with Bell's Mr. Satchel.

Chas B. Satchel

## Speaking Telegraph.

Sept 24<sup>th</sup> 1894

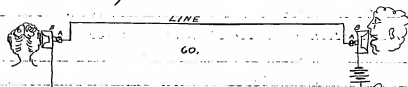
We have devised a new way for holding our fluff in the speaker as in Fig 59.



A is the diaphragm with piece of cork C shellacked on, on the end of which is a disc of metal  $\frac{1}{16}$  of an inch in diameter.

B is a brass piece hollowed out to receive the rubber piece E which is made with a flange to prevent the fluff from coming out when placed inside, into the rubber placed in the brass. B is also supplied with a screw D which fits any machine and consequently new fluff can be supplied in case of need in this machine.

We find that we can receive on our transmitter as well as talk. This is very peculiar and must be due to expansion and contraction of the plumbago by heat which causes the mica diaphragm to vibrate the circumstances of the circuit are as follows:-



A is the silk fluff. B the diaphragm. The compression of the fluff at one end by the force shortens the resistance of the circuit and heats up the other fluff which expands and attracts causing the diaphragm to respond.

In Fig 59 this screw fits in the piece that slides into the stock.

-Chas B. Satchel

# Speaking Telegraph

Nov. 9<sup>th</sup> 1877.

Our fluff holder contained silk saturated with Plumbago, but this we find shakes out with time, and the articulation consequently deteriorates; we have substituted silk cloth covered over on both sides with a thick paste of plumbago and dust; this silk is cut in discs, and a number of them is put in the holder, and the resistance of the circuit is altered by pressing them together and opening them out again.

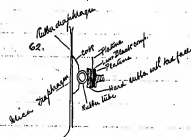
We thought this an improvement, but these also deteriorated not by losing their Plumbago but by continual tampering they get perfectly flat and without spring.

Mr Edison also found out that Plumbago does not alter its resistance by pressure as we at first thought, but the increased pressure made better contact and as this was the case we proposed to use hard (fluff) made of a combination of Plumbago and other materials.

The best combination we found is 1 gram lamp-black (our) and 200 miligram. Rubber dissolved in Bisulphide Carbon this is very sensitive and we make it into a small cake perfectly flat on

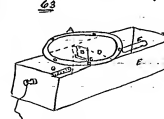
both sides as in 61. The construction of the telephone was slightly altered for this purpose contact and as we make it now is shown in 62.

You speak against a soft rubber diaphragm on the other side of which lays a mica diaphragm loosely, only fastened at one point which it is in place for. The centre of the mica is placed a disc of cork to which is shellacked a piece of flexible tube which act as a peculiar spring, this pushes against a



small disc of rubber faced with kid, next to the kid is a disc of platinum foil and next to that our composition cake of lampblack and rubber which rests upon a platinum surface. The faces of these discs must be exceedingly true in order to get more points of contact. We have now one hundred made after this plan and they work well we have yet to see whether they will stand.

Another Speaking telegraph we made



as shown in fig. 63. A is a diaphragm mounted over a tin cell box E in which is two electrodes + & - in the partition D is a fine slot which is closed or opened by

the plate B which is fastened to the diaphragm thus altering the resistance of the circuit on each movement of the diaphragm.

This works pretty well the articulation being good but low.

We also made another telephone thus:-

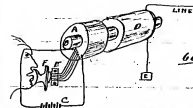


Fig 64. A is a spool round one B which is kept permanently magnetised by battery C; this by induction sends currents

over the line through spool D. In spool A each layer is connected by wire to a platinum point in an insulated stand E so that you have a row of points very close together each are connected to its respective layer of the magnetising spool A. You now place a diaphragm with an elliptic spring on its face in front of these points so that it shorts out the magnet and gives variable magnetism. In order to give all the finer sounds the magnet A should have a great number of

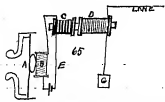
layers of the wire should be connected to the stand very frequently during the winding of the magnet.

Chas. B. Schellor

### Speaking Telegraph.

Nov 15<sup>th</sup> 1877

The principle of increasing and decreasing a local polarising circuit as shown in Fig 64 we have tried as shown in Fig 65.



A is a diaphragm on which is fastened an elliptical spring which is pressed out the steel of fine platina wire B short-circuiting the coil and continually altering the resistance of local polarising circuit E. D is a magnet on line working by induction from C. We tried this and the coil B measured (35) ohms and with very loud talking it was reduced to 20 ohms.

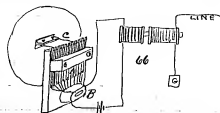
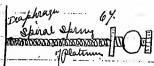


Fig 66 is also another way of doing the same thing but a more reliable one. A is a lot of springs, each connected with resistance coil B, so that when knife edge C on diaphragm touches points of spring, it will short circuit some thus increasing and decreasing local circuit. Plate C must have its edge about  $\frac{1}{8}$  of an inch out of square so that it will touch more at the end first and then each successive one from the device in 67 we got very fair talking.



Great deal when talking

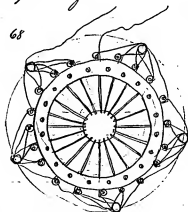
Diaphragm vibrating caused the platinum spring to alter resistance and we got talking pretty fair.

Spring shakes about a  
Chas. B. Schellor

### Speaking Telegraph.

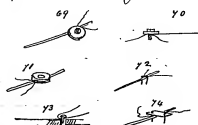
Nov 17<sup>th</sup> 1877

I proposed to Edison that we should make a telephone on the principle of Fig 66 but made in a circle, as one great trouble with 66 was that there was too much strain on one side of the diaphragm. This we have done in the following manner.



68 is the arrangement of springs which we call the 'sunflower' all having their ends bearing on the edge of a hole perfectly true on the face. The diaphragm is so arranged that in the  $\frac{1}{16}$  of an inch movement it closes circuit with them all one after another.

These springs are hair sprung and faced on their points with platina



ways of fastening connection to hair spring

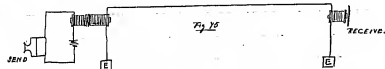
- 69 Screw + washer clamp
- 70 Spring soldered to washer
- 71 Split washer clamp
- 72 staple
- 73 Spring bent + wedged in hole
- 74 Cap held by pins

We however found that the rebound of these springs prevented perfect articulation, and as yet we have not found any means of dampening the rebound sufficient to get it.

Nov 24<sup>th</sup> 1877

We have found that our telephones as shown in Fig 62 works best when they are placed in a polarized circuit and the line worked inductively. The margin of adjustment is very great working as well when the little rubber ring is flat with pressure as when in its ordinary state. The full range of adjustment does not seem

to alter it more than one ohm and consequently with plenty of pressure it is not liable to alter and get out. Fig 75 shows it.



I have also tried to work on this local polarizing principle platinum points arranged as in 76 and 77. In 76 A is agate and B is platinum and spring on diaphragm strikes no point but rubs on the surface. In 77 we have two diaphragms each with a platinum point on and one adjustable when you speak against one the other

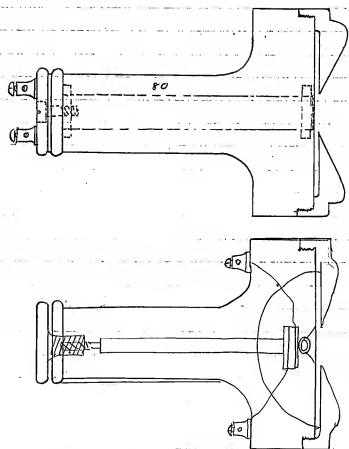


has commenced to move and strike as sharp. I have also put the whole thing on the diaphragm thus Fig 78 and have tried 79 two diaphragms one with point and the other with a small piece of rubber tube round which was stretched fine platinum foil



Chas. M. Mather

Speaking telegraph Dec 1<sup>st</sup> 1877

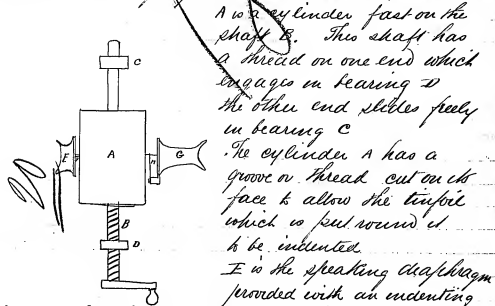


## Phonograph.

Dec 4<sup>th</sup> 1877

This machine we devised for the recording and reproduction of the human voice, it consists in moving a sheet of tinfoil in front of a diaphragm having an indenting point in its centre, which when vibrated by the voice indents the number of vibrations accurately on its surface, this indented sheet is afterwards moved in front of another diaphragm to which is attached a point on a delicate spring. The movement of the spring in passing over the indents on the tinfoil transmits to its diaphragm the rates of vibrations recorded there and the diaphragm gives forth the sounds originally spoken.

The machine proper is shown in Fig.



point F. B is the reproducing diaphragm which receives its vibrations from spring F. The work well and the plan "How do you get that" comes very plainly.  
 Chas. Batchelor.

## Phonograph.

Dec 26<sup>th</sup> 1877

We tried a very interesting experiment to-day sent man to New Brunswick to work one end of telephone during experiments we spoke a sentence to the Phonograph and afterwards held the transmitter to it as reproduced them the sentences were received perfectly at the other end by several people.

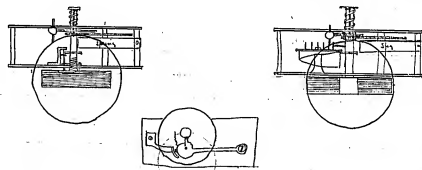
Chas. Batchelor

## Phonograph.

Jan 29 1878

While Edison and I were experimenting at Aurora, Conn. with the Phonograph in order to apply it to speaking clocks we found out that soft rolled copper answered excellently for recording in place of tinfoil and although the indents could hardly be seen in some cases, it came out clear and louder than ever before; of course with copper we could use a stiffer spring and have it more rigid on the diaphragm than when we used tinfoil.

I designed three different ways of applying it in place of the sticking attachment for clocks.



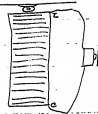
Chas. Batchelor.

## Speaking Telephone.

Feb 4. 1898.

I conceive the idea that a battery might be so constructed that its resistance could be varied by the action of the human voice, either by pressure or by the increase of surface of one pole.

For instance a battery pole as in Fig



with diaphragm on top to press down as the words are spoken against it.

If you can only alter it one ohm it will be sufficient as nearly all the talking on our Carbon telephone is done on only about 6 ohms difference. And we have got it very well indeed on a difference of only one ohm.

In Fig. I should make a copper diaphragm and should use a low resistance magnet to receive it.

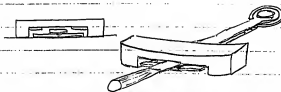


Chas. Katchelov.

## Switch.

Feb 4. 1898.

On our telephone end we used a switch that has a left and right point but it has to be left when not in use or neither of these but must stand between for this purpose I devised the switch shown in Fig. it works admirably and comes to center instantly.



## Check Stamps.

It occurs to me that if a machine could be made to cut out or even emboss or raise up the figures on a check it would be very valuable and come into general use amongst banks and merchants. It would have to cut it out something like this

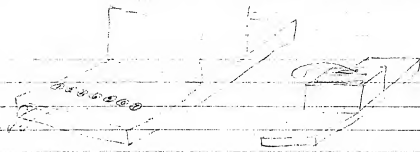
—340021<sup>23</sup>—

In order to answer it would be necessary to—

1. Make 8 changeable wheels.
2. Make it so that the dash is always before and after and no space between so that the first dash would be altered almost every time and the last one scarcely at all or it might be always stationary then  
—...21.29— or it might be  
-----21.29—

Feb 4. 1898

Chas. Katchelov.





## Speaking Telegraph

Apl 2<sup>nd</sup> 1898

We had a test today with Edison in New York and Batchelor in Philadelphia of the Edison Carbon telephone and the Phelps Magneto telephone. The wire used was a no 6 wire and run right along the railroad amongst 22 or 23 other wires some of which were working the 'Washington Quad'. The induction was very heavy notwithstanding this. Orin and Bentley conversed with perfect ease on the Edison instrument whereas with the Phelps not a single distinguishable word could be got. The Edison was the most improved pattern transmitter with thick plate and solid connection between the plate and the aluminium so that it works more by pressure than by vibration. The Phelps was a new large magnet and double diaphragm placed as in sketch and when put on the line the usual 'frying pan' is turned into a complete roar. Nothing could be got over the wire and in a conversation over the Edison instrument the Phelps acknowledged to no other that the magnet was not capable of working such wires.



E/B

Is the sound on the telephone receiver produced by rarefaction and condensation, or by vibration of the diaphragm?

April 29<sup>th</sup> 1898

Experiments to find out something definite in regard to the above:

1 This experiment was the placing a telephone receiver on the mouthpiece of the phonograph from which with our latest talking we could not we could not get an indent on the tinplate.

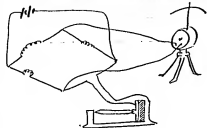
2 I took the spot and ore out of receiver and also mouthpiece out of the phonograph, and then fixed the ore and spool so that it acted directly on diaphragm of phonograph the ore only being to of an inch away from it with this device we could not get anything at all. This shows that the indents (if any are made by vibration) are infinitely smaller than those produced by the mucus bar although you cannot detect even them with a magnifying glass of ordinary power. It may be that the action of the magnet ore had something to do with the dampening of the diaphragm so as not to leave it free to work.

Chas Batchelor

May 2<sup>nd</sup> 1898

## Pressed Carbon Micro-tasimeter

We have long noticed the expansion and contraction of our telephone cases and consequently variability of adjustment - and about the middle of April made an instrument to detect fine degrees of heat which consisted of a button of our pressed carbon suitably mounted with a strip of rubber resting against it on which the heat strikes lengthening or shortening same and putting more or less pressure on



When arranged with battery and galvanometer in Wheatstone bridge it is exceedingly sensitive.

If a strip of gelatin be substituted for the hard rubber it is exceedingly sensitive to moisture also.

Chas. K. Ketcher

June 1<sup>st</sup> 1898

Microphone =

The arrangement of Hughes is an infringement of our rights and he has nothing but what we have already gone through to get our telephone.

June 6<sup>th</sup> 1915

When Sulphur, Vulcanite, or shellac is rubbed and presented to the surface of water, the water will peak up about a quarter of an inch and instantly go down again although it seems to touch the substance it leaves no drops after it. I think it ~~is~~ raises just far enough for the electricity to discharge itself and then return. Positive electricity got by rubbing glass rod with silk as well as negative attract the water in this manner as well as small pieces of sulphur floating on the surface.

I find that both positive and negative electricity repel a floating needle in the water whilst they both attract pieces of cork floating on the surface very strongly.

In a magnet I made for J. C. Bliss I found that the magnetism set one prong north and the other three south thus it is possible to make a magnet with two opposite poles south.



Chas. Batchelor

### Telephone Experiment

June 6<sup>th</sup> 1915

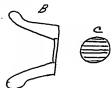
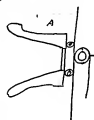
Edison and myself with Prof. Barker and Mr. Robinson tried some experiments with regard to how far off sounds could be made that would be effect the plate on our transmitter and send over 100 miles. Prof. Barker was at my house with me. Edison stood 100 feet away and talked in his ordinary voice and we got it distinctly. The music box was played (15) fifteen feet away and heard distinctly. Our carbon button was pressed four times very delicately and had a silk disc on each side coated with phosphor.

Chas. Batchelor

# Phonograph

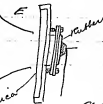
June 14<sup>th</sup> 1898

Experiments to get clearer articulation in regard to the hissing consonants, our mouthpiece being deficient in this respect. Fig A is the mouthpiece as we at present use it. Fig B is same but with pieces of watch springs placed edgewise across the hole to increase the 's', 'sh', etc.



I have tried two semidiaphragms and also 2 mica diaphragms also a very small rubber one and a mica one larger behind. So:- Fig E

Also two air diaphragms with the one nearest to the mouth perforated with a number of holes but the plainest talking is to be got by using an ordinary diaphragm with a piece of thick card perforated with a large number of holes in its center and fastened to the end of the mouthpiece. The card on the card turned to the mouth this without any dampers is the best talking for clearness I ever heard.



Charles Chetor

# Phonograph

Aug 25<sup>th</sup> 1898

The principle of dampening the diaphragm on the phonograph is all wrong when dampened like this. The fur, so do not come as the diaphragm vibrates between the springy rubber and don't affect the spring on the tinplate. I have made a device for dampening both sides which gives equally good talking without the spring thus:-

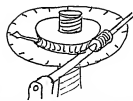




the articulation on this is slightly improved  
but it has more harmonical sounds. owing  
to the point being direct on the diaphragm.

### Carbon Resistance -

Aug 15 1898



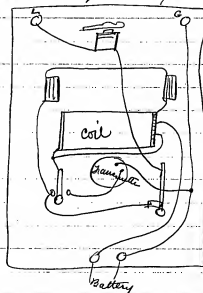
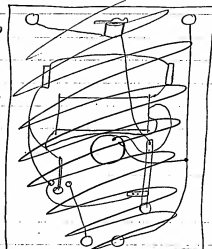
to make a resistance b/c of carbon  
pills to work from 1000 to 10000 ohms  
it is necessary to put on a movable  
attachment as the best dead left I

can get is only  $\frac{1}{2}$  of an inch.

*Edison Carbon Telephone Desk and/or pattern  
Connections*

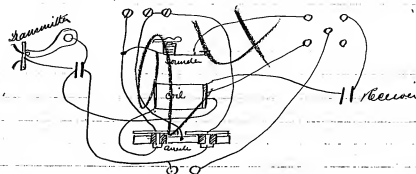
*Sept 3 1941*

*No cords  
on this  
pattern  
but ear-  
tubes*



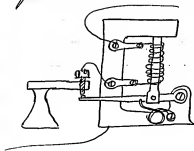
*Edison Carbon telephone as made by H.V. Tel. Co.  
Desk pattern of Phelps*

*Sept 3 1941*



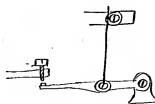
Electric Lighting:  
Subdivision. Sept. 10, 1878

Exp. 1



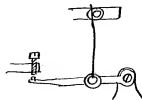
Platina spiral heated by in-  
candescence expands a zinc  
rod so as to open and control  
circuit. This works well but  
gets hot making one larger

2



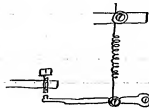
Platina rod heated by in-  
candescence expands and  
open its own circuit. This  
regulates very rapidly

3



Steel rod heated expands  
and regulates its own  
circuit

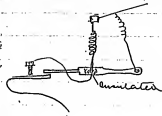
4



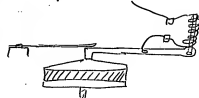
Platina spiral expands  
and open circuit

5 Steel spiral in place of Platina gives very  
good light and shows a great deal of  
experimenting with it in place of platinum  
on account of cost

Electric Light Subdivision  
Sept 19th 1898



Double circuit





Charles Batchelor Notebook, Cat. 1308

This notebook covers the period March 1878-January 1880. Most of the entries are by Charles Batchelor, John Kruesi, William Carman, and Stockton L. Griffin. There are also a few entries by Edison and Francis Upton. From February 1879 through January 1880 the notebook was used as an order book for experimental devices made in the Menlo Park laboratory machine shop. Included are orders relating to the electric light, the electric pen, the telephone, the electromotograph, and the phonograph. In April and June 1878 this notebook was used as a daybook to record accounts. From May 1879 until January 1880 it served as a record of telephones and carbon buttons shipped from the laboratory. A few entries for April and June 1878 contain lists of newspaper and journal articles sent to prominent scientists and other individuals in the United States and Europe. The front cover is labeled "Order Book No 1." The book contains 288 numbered pages.

Blank pages not filmed: 210-215, 218-227, 246-262, 267-273, 278-279, 288.

Missing page numbers: 1-56, 229-230, 263-266, 283-286.

E 5795-8

Cat 1308



237 Shows fr. Aug Dec 32



70

70

Have George get 1/2 doz assorted panels

Send day for following visitors:

Agnes C. Lordland, Griffiths, Lewis, Davis, Griffiths  
 Alonzo Brooks of Penn., J. J. Shanko, N.Y. Williams  
 Also Strong, Lewis, B.S. Conway, Miscellaneous Agency, N.Y.  
 Cur. Commemorative Curriers  
 Mar 11, 1876 — 5 copies

Buffalo courier Mar 14 —

Buffalo Commercial Advertiser Mar 14

Chronological Journals February

Rochester Evening Express Mar 16, 2 Cps

Commemorative Comm Advertiser Mar 18, 1876 10  
 do do 11, 1876 10

~~Subscription for Bazaar must be closed  
 about May 8.~~

Get binding books. — Anne Babler rings.  
 move to book

Go on to Lapham's office on Wed. Friday

Send Ben. Clark to Dover, Jackson, Thompson  
 Battle, Hattigan, J. D. Batecher, Davidson, Will. Kaler  
 H. Batecher, H. B. Batecher, H. B. Batecher, H. B. Batecher  
 H. Batecher, H. B. Batecher, H. B. Batecher, H. B. Batecher  
 Count the money.

Get 100 ten N.Y. medals of 1876 — see over





~~Send Graphics to~~  
~~Phases, Plucka, Infusumel, Adama~~  
~~Phases, Plucka, Infusumel, Adama~~  
~~Phases, Plucka, Infusumel, Adama~~  
~~Phases, Plucka, Infusumel, Adama~~

~~Send Francis Lipp. Same as above except M'Kings.~~  
~~James Parker, James Lipp, James Lipp, James Lipp~~  
~~James Lipp, James Lipp, James Lipp, James Lipp~~  
~~James Lipp, James Lipp, James Lipp, James Lipp~~

~~Will credit my A/c with~~  
~~Check to J. G. L. for fees~~  
~~24.17~~

~~Will credit my A/c with~~  
~~Check to Edison for~~  
~~Personals etc. \$24.20~~

~~Will credit my A/c with~~  
~~Check to J. G. L. for fees~~  
~~Half tel. half phone.~~

~~Write to (Chicago Tribune) Express for 25 copies.~~  
~~Write to Mrs. Fisk him to get them & charge~~  
~~to Edison.~~

~~Write & get Cincinnati Commercial~~  
~~Apr 3 1895. 12~~

~~Get 100 New York Times of the 10th April~~

~~Will make me debtor to 100~~  
~~Cash from Edison check 25 + cash~~

~~Will credit my A/c with~~  
~~4.00 for express~~  
~~1.00 Express telephone~~  
~~\$1.50~~

~~Dr. Francis M. Lipp~~  
~~Lipp's~~  
~~Apr 17.25~~  
~~25.00~~

~~Barman~~  
~~Give B. credit for~~  
~~Apr 13 Express etc. 74¢~~  
~~13 Express papers 1.20~~  
~~16 Papers 2.01~~  
~~\$3.94~~

~~Apr 16. 1895~~

~~Barman~~  
~~Get 12 Evening Posts for April 16. 1895~~  
~~Keep me for me.~~

~~When the Philadelphia paper comes to me at New York~~  
~~Send one of each to the following:~~  
~~Mr. J. B. Smith, 112 Broadway, New York~~  
~~Mr. J. B. Smith, 112 Broadway, New York~~  
~~Mr. J. B. Smith, 112 Broadway, New York~~  
~~Mr. J. B. Smith, 112 Broadway, New York~~

~~Write the Evening Post article to Campbell~~

~~Two lots of Philadelphia paper will come to B. B. B.~~  
~~at New York send one of each to all your name~~  
~~and keep track of each for me. B. B. B.~~  
~~You will have to send up for them tomorrow~~

Apr 14 1878

Carmen credit my account with  
Cash Brown 1878 11/11  
Cash & Jan 1878 600 for Monograph 16.50  
21.20

Carmen credit my ac with  
Mapes 2.50  
Nickel plating 2.00

Set day for slaves Oliver Ayers Lomeland  
J. J. Shanks NY Customs Shes Douglas Mercantile Aug 20 1878

Carmen credit my ac with  
Monographs 1  
Martin Chapman & Johnson

Car. Komer  
Loma 30X

Book Post Office Apr 19. 7m 1878  
#12 339 Jan 1878

Marks Evening Star Apr 19  
1st 2nd Apr 11 1878

Car Batchelor 222 Patera

Car N. C. C. 25  
E. J. C.

Send to A. H. Parker for 20 Copies of  
the Post Office of 1878.  
also 20 copies of the of 1878.

Car Batchelor (Batchelor)  
Green 1878  
Batchelor

Car Batchelor of 1878  
25 Copies of Evening July 25 1878

Get = A Book called —  
An Etymological Glossary of nearly 2500 English  
words in common use derived from the Greek  
By Edward Jacob Bayce M.A. Rector of Houghton  
Hants. London George Bell & Sons York Street  
Covent Garden 1878.

Send for the Van Nostrand. WC

Apr 26

Carmen: write to Sullivan's Journal  
and get No 130 for July 1878 2 Dimes  
containing article on Itacolomite or jointed  
Stone

Carmen

Credit Batchelor with  
Apr 25. — Cash & Labor (Fogel) 12.33  
" " " (Fogel) 2.50  
" " " (Fogel) 58  
" " " (Fogel) 1.60  
" " " (Fogel) 17.01

160  
154





him this for ~~the~~ to L. A. Loring  
 c. No. 147 ~~to~~ for ~~the~~

Carman

Credit Batchelor  
 May 7 Cash for papers (29.00 etc.)  
 9 " telephone exp.

1-50  
 04  
2.19

H. Carman

Credit Batchelor with  
 May 15 <sup>28</sup> 97% Nickel plate for telephone  
 11 + 6 bill for diary with papers etc.  
 10 Cash (check) to Carman for Redun (copy)

1.03  
 9.00  
 5.97  
\$10.00

H. Carman

Debit Batchelor with  
 Cash from Carman's papers

1.95

also note return that George paid for papers not  
 OK 1st of the money Carman should have got.

Carman Write to Bliss and ask him to send  
 us 10 Chicago Tribune of May 4<sup>th</sup>

Send this to Jim and tell  
 him to send me.  
 this

to me should miss before Thursday

~~Carman's papers~~

Carman

Cut out price from Chicago Alliance & Soap Adver

Credit Batchelor with

Cash to J. G. Thurner 16.00  
 Cash to Geo C's expenses 1.71  
17.71

for H. Carman's letters paid to George  
 1.05

Evening Journal Jersey City May 9 1898  
 get about 5

Get 10 words of Friday May 14 1898

Credit Batchelor with

Cash to Photograph Exp. 5.00

Credit Batchelor with

Pale Pollard's Bill 12.40  
 Paper etc. for 2.31

Carrman

Credit Cash to

P. Bagman &amp; C

475.00

C. F. Phillips

150.00

James Adams

100.00

Chas. Batcher

100.00

James Gallagher (Portman)

21.25

H. Khan

134.59

J. Kuei

500.00

L. G. Tillman

67.98

F. K. Fitch

75.30

David Davis for home

125.00

1757.42

Carrman give Batcher credit for

George's exen.

45

Rumal

45

Bill G. Patterson

89

2.81

Carrman Credit me with

Expenses for Owl

156

Lays hit for center

276

Japan

60

Blow out

60

Expenses

25

8.74

Carrman Give Batcher Credit

for

Photograph Cash to B. B. Boucher &amp; Co 466

Carrman

Credit Batcher with

Cash to Laborer (Kuei Kuei Kuei)

\$55.26

Carrman

~~George has brought me a  
scrap tomorrow~~~~Carrman Tell George I want him to get  
the lot my place up place on to me  
if those two tables and write give him  
instructions how to go about making  
it go.~~

Carrman make Batcher \$55

Cash from Kuei

55.26

Carrman credit Batcher with

2.00

Cash to Glenn for

I will forward what for

William &amp; Plum

Large Blotter &amp; Rubber bands

Shaving Brush

Or to C. Carrman

May 22 John 30 and wife 17. Book 5

Car 30. Bus 3. Horse car 5

92

May 23 Sun Paper 30. Casing 17. Appa 5. Bus 3

56

24. Appa 5. Horse 3. Appa 10. 110.

Extensive 17. 30. Bank 100. 20

200

May 25. Change Manning. Freeman 3248

3248

Change Manning. Freeman \$200.

Co. B to [unclear] with [unclear] articles  
 Planning for [unclear] 22 Co. [unclear] [unclear]  
 Office of [unclear] [unclear] [unclear]

Carman

Credit Batchelor

Saw Blades 8.00

Papers & tickets for George

Postal Cards

1.29

1.27

63

3.39

mu

got one hold of May 31<sup>st</sup> and

put in [unclear] book

Number of same date - 2

Make

Batchelor Debtor

Cash from [unclear]

10.00

Make

Batchelor Auditor

Papers from [unclear] & Co

4.50

Papers [unclear]

63

Printed [unclear]

1.93

22.141 157.1/2 from [unclear] [unclear]

3.20

6.26

Charge Pump Room

\$100.

June 1. 1876

Scientific American & Sup

10 Copies of each

June 8

Journal Telegraph

40 Copies

40

Apr 16, 78

June 1. 79

Credit Batchelor with

Cash to this bill

3.00

Cash to Martin [unclear]

1.00

4.00

Cash Batchelor with

Cash to Patterson [unclear]

168

Cash Batchelor

187

Sent North American Review - 60¢ 1878

for April

Count on Moncel  
 Dr. W. M. Thompson  
 Mr. Fleming Jenkin  
 Mr. Schellen

Plat June 1878

Gamma credit Batchelor

Paper 1.79  
 Scraps plate & box 1.08  
 George's expense 48  
3.30

George's 1/2 doz Scraps boxes for  
 known size

June 7th 1878

Credit Batchelor

Cash to Messrs for Expense 90¢

June 8<sup>th</sup>

Credit Batchelor

Castings telephone

Seven

Newspaper

15  
 39  
 200  
3.09

June 10<sup>th</sup> 1878

George's

Get 5 Copies of the Graphic  
 for June 8<sup>th</sup>

June 11<sup>th</sup> 1878

Credit Batchelor with

Bill of Glassware (Chimney) 2.00  
 Paper and sundries 3.91  
 Reks. fare, etc. 5.91

Debit Batchelor with

Cash from Edison 10.00

June 12 1878

Credit Batchelor

Cash R.R. fare

Half Bill for oil

Cash & gas for Madison

5.25  
 5.00  
 6.00  
10.40

June 13 for Batch

Laboratory ac. Patterson Bldg 232

Telephone ac. Edison 362

Telephone ac. gas

Expenses

6.91  
 2.10  
 9.01

Cr. Batch

Phone ac

Telephone plate

Get ac. Street Book

90  
 1.50  
 1.00  
46.1

June 1st  
 Credit Butcher with \$8.00  
 Cash to Ch. Craig 1.44  
 Cash to unknown bill 19.77

17 Credit Butcher with \$8.34  
 this bill

Cr. Batey \$6.00 for Steals

Credit M. & Mfg. Co. with  
 Cash to Ch. Adams -

Credit ~~Ch~~ Cash with  
 cash to Fred Thomas 6.20  
 " " Insurance 24.00  
 " " Acme Hn 28.22  
 Chicken feed 2.02  
 M. Carman (Cash) 14.80  
 B. Butcher 62.84  
 138.01

Credit ~~Robert~~ this bill 1.56

Credit ~~the unknown~~ 2.49

Credit Butcher with \$10.34

Paid out of M. Carman paid everything  
 on Crocker bill and made cash credit  
 to Crocker Dr. for amount

June 19<sup>th</sup>  
~~Credit Batchelor with the bill~~  
~~of sundries \$4.13~~  
 OK me

June 20<sup>th</sup>  
~~Credit W. G. Duff Co with~~  
~~Cash for 100 lbs~~ \$100.00  
 OK me

June 21<sup>st</sup> ~~Batchelor with~~  
~~Credit Cash with cash~~  
~~of 2 humans~~ 11.25 OK me

June 24<sup>th</sup>  
~~Credit Batchelor with~~  
~~Cash to (Edmund) 2.00~~  
~~Cash to L. O. L.~~ 10.00  
 \$100.00 OK me  
 \$110.00

Debit Batchelor with  
 Cash from Edmund \$100.00 OK me

~~Credit Batchelor with~~  
~~Cash \$4.13~~

June 22<sup>nd</sup> 1891

Debit Batchelor with cash from Miami  
 for 100 lbs of cane meal \$75.00

Debit Batchelor with cash from Edmund  
 for 100 lbs \$10.00

~~June 22. Credit Batchelor with  
Expenses from Chicago \$1.38 Mr.~~

~~22. Debit Batchelor Dr  
Cash to George from Cash \$10.00 Mr.~~

~~22. Credit Batchelor with this bill \$9.12 Mr.~~

~~24. Credit Batchelor with  
Sundries \$16.14 Mr.~~

~~24. Debit Batchelor with  
Cash \$10.00 Mr.~~

~~26. Credit Batchelor with  
Cash to Edison .16.00  
Cash to bill 1.06 Mr.  
17.06~~

~~27. Debit Batchelor  
Sundries \$2.24 Cash to Mr. 9.24 Mr.~~

~~June 29 Debit Batchelor with  
Cash from Edison \$90.00~~

~~June 29 Credit this bill to Batchelor  
minus Nurse's wallet. \$10.11~~

Will have opened a new account to Char 13.  
Nurse's Account look at it.

Will Credit Batchels a/c with  
Expenses

July 4<sup>th</sup>

Credit Batchels with  
2<sup>nd</sup> Graphic of Hogeness Co. 2.00 ✓  
Jacks " Electric Room 2.00 ✓  
Anthony's Beer 1.50 ✓  
8<sup>th</sup> Maslin " Can fare + horse 50 ✓  
Expenses 1.14 ✓  
5.45 ✓  
5.45

Will make Milers + Gibbs debt to \$20  
George can tell you about receipt  
Also debit Fraser 12.50 ✓

Phot  
Lab 1.97  
383

Photogram 15.82  
1.97

Lab ac

2.00

2.00

2.00

2.00

2.00

2.00

2.00

2.00

2.00

2.00

2.00

2.00

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2.00

2.00

2.00

2.00

2.00

2.00

2.00

2.00

2.00

2.00

Scientific Amer July 13-2

July 13

Will. Carman

Debit Batchels with cash \$10-

Credit Batchels with  
Cash to Laborn Charge

July 15 Cash  
Adams & Cash Royalty plan  
C.Y. Stock 250.00

Cash Cr. + Batchels \$250.00

Batchels Cr.  
J. Adams Royalty ac. 250.00  
C. Batchels " 50.00  
Laborn 140.00  
C.P. Edition 10.00  
Expenses .05  
225.05



July 17. ~~Cash to Batcher Co~~  
~~Cash to Batcher Co~~  
~~Cash to Batcher Co~~

Cr Batcher Co 17 Express 25<sup>+</sup>

July 20<sup>th</sup> Batcher Co

16<sup>th</sup> Cash & Advertising etc 6.94  
 Cash to Batcher Co .25  
 18<sup>th</sup> Cash to Express & Batcher Co 5.86  
15.48

July 20 Batcher Co

Cash from H. V. Sel. Co 100.00  
 Cash from the Shaw Co. 50.00  
 on 9<sup>th</sup> of July 150.00

22 Batcher Co

Cash to Batcher Co 100.00

July

23 Batcher Co

Graphic 4.10 ✓  
 Stationery 2.54 ✓  
 Home Car fare 1.00 ✓  
 Express 34 ✓  
31.58

Be B E B — 36.50 Batcher

24<sup>th</sup> Batcher Co  
 Telegram  
 Batcher Co 25<sup>th</sup>  
46.00  
 71.01

Spokane Telegraph Co Co  
 to Batcher Co  
 Cash 755.00

25 Batcher Co

Stationery & Batcher Co 1.20  
 Linotype 1.45  
 Carfare & Paper 1.45  
2.39

Cr Batcher Co

231.40  
 15.11  
 82.11  
 151.96

24 Char Batcher Co

to H. V. Sel. Co 100.00  
 to B. P. Phone Co 50  
150.00

24 Char Batcher Co

to Batcher Co 5.00  
 to Batcher Co 5.00  
10.00

25

B. P. Patterson 45  
 Photo Car 10  
55

July 20<sup>th</sup> June 26.75

3.10

24 ~~for Batcher with 1.40~~  
~~for Zato a/c~~

~~not signed finally - 29. 2 Copies~~

July 30  
 Char B. Dr. \$60.00  
 Cash from 2 telegrams

Char B. Dr. \$60.00  
 Cash to Hussay

July 31  
 Batcher Dr.  
 Cash to Hov for megaphone \$8.15  
 Char B. Dr. \$60.00

Aug 1 177  
 Batcher Dr.  
 Cash from G.T. & Nopely \$500.00

Batcher Dr.  
 Cash to Hov for 300 telegrams \$1.10  
 Cash to J. Hovney (B. Hovney) \$24.00  
 " " C. J. Edman Dr. 8.00  
 " " G. Cassman 10.00  
 " " M. M. Hussay 50.00  
 " " James Adams (B. Hovney) \$25.00  
 " " Char Batcher (B. Hovney) \$100.00  
 " " 215.00

Hussay Dr. to \$10.00  
 Carefully

Make G. Cassman Dr. to \$10.00

Aug 1 Batcher Dr.  
 Hovney choice tele \$5.00  
 Hovney bill 1.40  
 Hovney 5.00  
 Hovney 2.25  
 Hovney 4.44

Aug 2. for Batcher Dr. \$2.88  
 Charcoal

Endowment June 29  
 " July 6

Aug 2. Credit Batcher = \$1.05  
 Charcoal paper  
 by G.T.

Aug 3 Credit Batcher  
 Hovney 4.01  
 Hovney 2.1  
 7.01

Aug 3 Credit Batcher  
 Cash to Labor (Giffin) 12.00

Aug 3. Debt Batcher with  
 Cash from H. V. \$100.00  
 Cash from C. S. Hovney 57.00  
 \$157.00

Aug 5 Credit Batcher  
 Cash to Labor (Hovney) \$80.00

Aug 6

~~Audit Batchelor~~~~Labor~~~~\$400.00~~~~Express to New York~~~~1.85~~~~\$ 61.55~~

Aug 8

~~Audit Batchelor~~~~Express (H. K. King)~~~~25~~~~Express to N. Y. (H. K.)~~~~1.55~~Aug 9 ~~Expenses Hawaii (Marine)~~~~1.10~~~~7.55~~

Aug 9

~~Batchelor Dr~~~~2 Expresses to Hotel + Express~~~~\$41.00~~

Aug 10

~~Batchelor Cr~~~~Cash to Mr. Carlson (Hawaii)~~~~5.00~~~~" " U. S. Nat. Bk~~~~130.00~~~~" " Stamp~~~~18.40~~~~" " 1 Reg. National Bk~~~~2.40~~~~" " 1 Reg. National Bk~~~~8.55~~~~" " Print~~~~1.00~~~~" " Sundries~~~~40~~~~\$185.25~~~~Batchelor Dr~~~~Cash from H. V. Tel. Co.~~~~\$400.00~~~~G. S. P. Co.~~~~250.00~~~~300.00~~

Aug 12

~~Batchelor Cr~~~~Cash to Labor~~~~\$100.00~~

Aug 13

~~Batchelor Dr~~~~Cash for Sunset Show~~~~\$400.00~~~~Batchelor Cr~~~~Cash to Mr. Carlson~~~~50.00~~~~Cash to Labor Guffin~~~~10.00~~~~Cash to Labor Bureau~~~~5.00~~~~\$65.00~~~~Batchelor Cr~~~~Cash to Crowell + Co.~~~~\$50.00~~

Aug 14

~~Batchelor Cr~~~~Cash to Labor~~~~\$5.00~~~~Bureau + Carlson~~~~5.55~~

JN

20.15 JN

54.85 Labor

75.00

Aug 15 ~~Batchelor~~ Cr  
 Cash to Stock 250.00  
 E. S. Phoro Co. 200.00  
~~Balance 45.00~~

~~Batchelor Cr~~  
 Royalty to Batch 95.00  
 " " Adams 25.00  
 Cash to Griffin (Lab) 40.00  
 " " John 5.00  
 " " American News Co. 6.00  
 " " Geo Carman 20.00  
 " " Manning Hanna 1.00.00  
\$301.00

Cr Wm Carman  
 Business Exp on Phon 8 2.00

Aug 20 ~~Batchelor Cr~~  
 Cash to Bank 54.53  
 " " to Carman 20.00  
 Cash to Matt Digger 20.00  
 17 Expenses at Newark 8.00  
 19 " " Newark 4.00  
 19 " " N. B. 80  
 19 Cash to J. Messer, Jr. 120.00  
\$196.95

Aug 19 ~~Batchelor Cr~~  
 Cash from E. S. Phoro Co. 50.00

20 ~~Batchelor Cr~~  
 Cash to Luton Lige 5.00

Aug 21 ~~Batchelor Cr~~  
 Expenses at N. Y. & Newark  
 Horse stabling & N. Y. ticket for  
 Fore C. M. & F. G. C. 4.60

22 ~~Expenses Magazine & Steamboat~~ 22.50  
7.10

23 ~~Batchelor Cr~~  
 Cash to M. F. Co. Expenses at N. Y. & Newark 50.00

~~Chat Batchelor~~  
 Ho. \$110 Tel. ac  
 2 sets. Telephones Fusing

Aug 24 ~~Dr Bacon Sampson~~  
 E. S. Phoro Co. 50.00

~~Dr Bacon Hunny (And)~~ 2.00

Aug 25 ~~Batchelor Cr~~  
 400 yd Lining 35 Expenses 35.00  
 Horse Car 10.00  
 100 yd Graphite 5.00  
 100 yd. Newark 6.00  
1.41

~~Batchelor Cr~~  
 Cash to Huntington pictures 1.50

Credit. Geo. Plan. Wash Agency  
 Aug 29. Cash. 439.42

Credit. Patchin  
 Aug 29. Post. to Cash. Wash. 16.00  
 " Check H. Moffat (House) 15.00  
 " M. H. H. (Bathhouse) 15.00  
46.00

Aug 29. a a Post. to Cash. 100.00

30. Cash. 100.00

50.00

Aug 30  
 Patchin. L. to Cash. 439.42

Patchin. Cr.  
 Checks 418 - 425 dupes.  
 J. H. H. 45.00  
 M. H. H. 15.00  
 J. Gallagher 22.14  
 P. H. H. 100.00  
 H. H. H. 50.00  
 H. H. H. 50.00  
 De H. H. 40.00  
 A. H. H. 5.00  
 G. H. H. 14.75  
 Cash. H. H. 15.00  
359.12

9.00

434.12

Aug 30  
 Patchin. Cr.  
 J. H. H. 39.00  
 H. H. H. 10.00  
 P. H. H. 20.00  
 R. H. H. 21.00  
 H. H. H. 12.50  
 H. H. H. 5.00  
128.40

Aug 30. Patchin. Cr.  
 H. H. H. 25.00  
 G. H. H. 10.00

28. Cash. 100.00

Aug 30. Patchin. Cr.  
 H. H. H. 10.00

Aug 30. Patchin. Cr.  
 H. H. H. 10.00

Aug 30. Patchin. Cr.  
 H. H. H. 10.00

~~Genl H. R. H.~~  
~~James C. Adams~~ 50  
~~Sp. L. C. R.~~ 5  
~~Geo. W. L. C. Adams~~

Will Credit Batcher with  
 Sept. 10 Sundries & George 45  
 " " " 39  
 " 13 " & Griffin 80  
\$164

Sept 13 ~~Exp. ac~~ 125  
~~John C. Adams~~ 25  
150.00

16 Car W. E. Mfg 200

~~Exchange B. & O. ac~~ 13.00  
~~John C. Adams~~ 27.00  
40.00

17 Cash Batcher den 1000

18 " " " 80

19 " " " 100.00

173/100  
 230

16 Car Krum 353  
 Exp. ac Plummer 118  
 " " " 30  
501

Car Batcher  
 M. E. R. R. ac 100.00

~~17 " " " 300~~  
~~18 " " " 300~~  
~~19 " " " 300~~

Will Sun Sep 23 158  
 My Harold Sep 23 158

Sept 24 " 1845  
 Batcher  
 Expenses of George  
 Sundries & George  
\$2.00  
41.30

Oct 1 188  
 Exp. 21 1/2  
 Exp. ac 210  
 Krum 60  
270.00

Oct 1  
 Batcher 1/2 Royalty 50  
 Batcher 1/2 Royalty 50  
100

Oct 2 B Krum 100  
 Exp. ac

~~Oct 11 1895~~  
~~Batchelor Dr~~  
~~Cash from Edison~~

Oct 1 G. E. Coleman To Cash 15.00

Oct 2 G. E. Coleman To Cash 4.00

8 Cash To G. E. Coleman 14.00

~~Oct 10 1895~~  
~~Batchelor Dr~~  
~~Cash from Edison~~

~~Oct 10 1895~~  
~~Batchelor Dr~~  
~~Bill of Materials~~

Oct 11 1895 G. E. Coleman To Cash 25.00

Oct 11 1895 " " " 10.00

Oct 12 1895 5 S. L. Jones To G. E. Coleman 18.40

Batchelor Dr 22.2

Oct 12 1895 5 S. L. Jones To G. E. Coleman 9.00

Batchelor Dr 6.30

1847 Q. L. C.

Oct 11 1895  
 Batchelor Dr  
 Cash from Edison 0.50

Batchelor Dr  
 Titanium oxide etc 4.90

Oct 14 1895  
 Batchelor Dr  
 Bill of Materials 1.45  
 20. Cash from Edison 3.50  
 21. Bill of Materials 2.39  
 6.34

Oct 25 1895  
 Batchelor Dr  
 Cash from Edison (Wagon) 10.00  
 Batchelor Dr  
 Freight 62  
 previous freight 50  
 Bill of Materials 18  
 11.90

Oct 26 1895 Batchelor Dr  
 Royalty for Cash from Edison 11.00

Oct 26 1895 Batchelor Dr  
 Bill of Materials for iron pipe and say 10.00

Oct 26 1895 Cash from Keweenaw 8.00

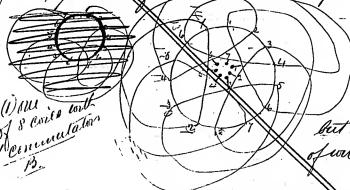
1849- Orders to be filled

No. 1.

Received March 1 1849

~~One Patent Office Model for Edison's New  
Gramme Electric Generator.  
Three (3) pieces, one full machine, one  
separate of Lefebvre and one of the armature~~

(See (A) and  
Model of 8 coils with  
commutator  
B.



~~The model of  
armature must  
be wound round  
on this principle  
but with only one layer  
of wire~~

~~Coil on Shell connected as in sketch  
Feb 22 1848 Batechelor~~

2.

~~One Electric Fan made to be driven by a  
Gramme ring, as shown in drawing No 2  
of this date. See Book 23. (about middle of book.)~~

~~Feb 22 1849 Batechelor  
Feb 26<sup>th</sup> 1849 Johnson~~

3.

~~One Patent Office Model of New Electric  
Lamp with globe of wire in vacuum, globe  
ring filled and with platinum wire or rim and  
platinum insulated by some such substance  
as estate of kyanaphene. Model shown on  
sketch marked order No 3 of this date.~~

~~Feb 22 1849 Batechelor~~

4.

~~Eight (8) cotton buttons and one 4 1/2 hole  
Black all fitted ready for pressing to be  
put in cases and enclosed in tin for Barrett  
of England~~

~~Feb 22 1849 Batechelor~~



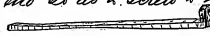
5. ~~The Patent Office model for preparing a sheet for duplicating should be by writing on a sheet with a soft point the said sheet lay on a plate resting on its surface immediately sharp point.~~

Feb 22 1899  
Feb. 24<sup>th</sup> 1899  
Batchelor  
J. Kinsale

6. ~~Make two 2 New Receivers in Walnut boxes to be used only as receivers.~~

Feb 22 1899  
Feb. 28<sup>th</sup> 1899  
Batchelor  
J. Kinsale

7. Alter the Large Magneto machine in the following particulars:-

1. Make new packings underneath the bearings and dowell both the bearing and the packing. ✓ ✓
2. Make new shell as shown in drawing marked order No. 9, Feb 16, 1899. Shell to be 76 sheets and have 3 german silver rings inside & stiffen it each & thick by 1/8 in length. This shell must be wound with (49) forty nine complete coils of wire as in drawing marked No. 10. The shell will be cut in for with 106 divisions but 8 of these divisions will be occupied by 4 feathers which run all the length of the shell the other 98 will be occupied by 49 and bottom of the 49 coils.
3. The feathers must be wrought iron and turned up at the end as a screw to the large casting as .
4. Large cast iron shell must be bored larger to suit wire shell and have the feathers grooves cut in it.
5. The commutator must be made with 49 blocks as shown in drawing marked Y B.

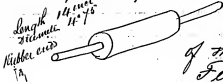
6 Commutator brushes must be made of wire and both insulated from the shaft instead of as before one fast to shaft.

7 Connection from shell to commutator

8 Resistance of shell must be

9 Resistance of armature must be ~~to~~ 6 ohms. This will be got by winding 16 complete turns of 16 awg wire on it.

10 A New Armature must be made in the following manner:- A solid cylinder of iron with wire wrapped round it in the manner of that on model no. 1  
 Length 14 in.  
 Diameter 1 1/2 in.  
 Higher end



Ed 22 1899 / Ratchin

Order 8.

Small Magneto Electric Machine

As shown in Drawing marked Order no 8. Also look at page 4 and 11 of Book 46 for sizes of wire and armature.

J/12

Order 9.Dynamometer

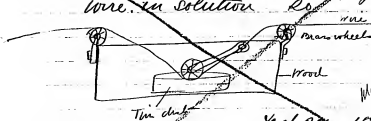
Mr. Russell on the dynamometer. There must be 2 insulated collars and one connected to the base each having bushes.

The insulated collar must be connected to X



Feb 22 1919 Batchelor

March 30 1919 J. Russell

Order 10 Make 4 small troughs for covering wire in solution

Made by Batchelor

Feb 24 1919 Batchelor

Feb. 24th 1919 J. Russell

Order 11

2 Electromagnet Receivers to be finished immediately. They were came from Bergdames yesterday

Feb 24 1919 Batchelor

" 24th " J. Russell

12. ① The model for new Receiver for serial to be sent over directly to done

Feb 24 1919

Charles Batchelor

March 4th 1919

J. Russell

13

On 1 Lime crucible for  
Chemical Laboratory + fit inside of  
a Graphite crucible  
12" diam 3" long 1/4 hole in  
Feb 24 1899 Balcheln  
Feb 24 1899 J. H. Hume

14

250 Carbon Buttons W.C. mfg. Co. Feb 26.  
Shipped March 17<sup>th</sup> 1899  
J. H. Hume

15

200 Carbon Buttons Phelps Feb 27  
Shipped Feb 27 1899 Balcheln

16

200 Carbon Buttons Bergmann Feb 28  
Shipped Feb 27 1899 Balcheln

17

200 Carbon Buttons Bergmann Mar 3. 99  
Shipped Feb 27 1899

18

200 Carbon Buttons Bergmann Mar 10. 99  
Shipped March 19<sup>th</sup> 1899

19

200 Carbon Buttons " Mar 15. 99

20

Make bones for Chem. Laboratory crucibles  
just as possible by putting on a larger  
driving pulley on counter shaft & laying  
blocks under the hangers.  
Feb. 24<sup>th</sup> 1899 J. H. Hume

21

Please see after the apparatus in Charley  
Flammer's bench for telephones to put  
right away. Under for me as I have  
left instructions on paper. Feb 25<sup>th</sup> 1899  
J. H. Hume

22

20 Carbon Buttons R. Newell, Buffalo, N.Y. Adv.  
 Finished Mar 2 1899 P.S. M.C.

23.

100 Carbon Buttons 9.00 L. San Francisco  
 Don't use Ray for packing between boxes  
 any more March 4<sup>th</sup> 1899 J.H.

24.

Fit one Snow Phonograph (Pools) in good  
 order new Edison wants to ship it soon  
 as possible M.C. Feb. 27<sup>th</sup> 1899 J.H.

25.

Feb. 24<sup>th</sup> 1899  
 Make rough box to show design of  
 telephone box new receiver principle  
 Finished March 2 1899 Satcher.

Mar 26.

Make one new telephone transmitter  
 with adjusting screw 300 to the inch and  
 a finger and plate sector to set it  
 by.



Round 24 to 25 inch

24

12 Carbon Buttons to Henry, Bentley  
 Price 200 sent by express B.  
 Finished Mar 2 1899 M.C.

~~Mch 1948  
 28.~~

~~1. One Model of New Receiver for Canada  
 Feb 28<sup>th</sup> 1949 Batchelor~~

~~29. Make 1 New receiver telephone complete of  
 wood just as we shall decide to make them  
 Dec 28 1949 Batchelor~~

~~30. Pax handle in iron pistol for Chemical  
 Laboratory  
 March 1<sup>st</sup> 1949  
 Feb 28 1949 Batchelor~~

~~31. Make 1 Improved Magneto Telephone as  
 shown in drawing marked order 31  
 March 1<sup>st</sup> 1949 Batchelor  
 " 7<sup>th</sup> 1949 J.H.~~

~~32. Alter Small Magneto machine as shown  
 in drawing supplied No 8 by changing  
 spaces all round to make  
 an outside shell~~



~~Book 24 page 31  
 March 1<sup>st</sup> 1949 B.  
 " 6<sup>th</sup> " K.~~

~~33. Alter Small Magneto machine as  
 to rotate the top and hold the field mag.  
 shell (drawing in) Book 24 page 33  
 March 1<sup>st</sup> 1949 B.  
 March 6<sup>th</sup> 1949~~

~~34. Alter Small Magneto Machine by making  
 an outside shell of iron, winding  
 wire round it, keeping it and  
 the armature still and rotating  
 the shell.~~



J.H.

As 40 must be made to change diaphragms  
 change for all known springs.  
 Change chalks early 11

Packed with cotton on top & bottom &  
 outside box with excelsior very elastic  
 arrived with one broken March 5th 1899  
 J.H.

35.

After exp. 34 alter to rotate inner shell  
 and amature cylinder together, Book 24 p 39  
 Bachelors. March 1<sup>st</sup> 1899 J.H.

36

Make an outside shell of rings of permanent magnets 2 inch thick  
 this wants to work so as to rotate the shell  
 Also rotate the amature cylinder along with  
 shell March 1<sup>st</sup> 1899 Bachelors

37.

Make an inside shell of permanent magnets forming a ring and make  
 so that you can either rotate the  
 shell or the amature  
March 17 1899 Bachelors

38

Make a hand piece of a dynamometer  
 on it for these small machines  
Book 24 page 38 March 2 1899 Bachelors

39

Make one new receiver of wood same exactly  
 as order No 6

March 2<sup>nd</sup> 1899 Bachelors  
 Finished Feb. 8<sup>th</sup> 1899 J.H.

40

1 New receiver ~~same~~ as order No 6  
 only pine instead of Walnut  
March 3 1899 B.  
 Finished 13<sup>th</sup> 1899 J.H.

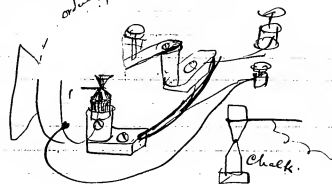
41

12 ~~Barbed buttons~~ ~~Shut~~ 4 H. Beatty  
 Phil March 5<sup>th</sup> 1899 Bachelors

March 13<sup>th</sup> 1899  
 J.H.

Order 42

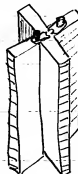
1 Transmitter

also 7 Grams and  
Telephone

March 4 1879 - 020 am

1/2 inch long Finished J.H.

43



Make (40) forty resistance Coils. <sup>noting p. 114 c.</sup>  
 Body of wood (pine) like sketch.  
 1 foot long and 4 inches across the  
 corners. 5 add the two ends  
 to binding posts that will take No  
 8 wire and which are fastened to  
 two blocks between which a cut out  
 plug will fit  
 Mch 4 1879  
 19 J.H.

44

Make Electric Lamp as shown on sketch 10 H.P.  
 for Johnson

March 6<sup>th</sup> 1879  
J.H. Mason

45

Make Patent office model about 1/4 size. like  
 brass photograph of up dome base showing  
 in back of page 210 showing strong notes showing  
 notes up & down also point on a stand etc. 1879 J.H.  
 done Finished March 12<sup>th</sup> 1879 J.H.



46 Make one more Patent office model like  
Order No 12 for the Service

March 6<sup>th</sup> 1899

" 7<sup>th</sup>

J. H. H. H.

48 Make a mould for ~~the~~ rollers for the Service

March 6<sup>th</sup> 1899

Finished March 6<sup>th</sup> J. H.

49 Make a mould same as order 48. To mould  
lampblack

March 6<sup>th</sup> 1899 J. H.

50 Make a Carbon Dipping apparatus (Drawing marked 1630)

March 6<sup>th</sup> 1899 J. H.

51 Make (4) four ~~Wicks~~ lamps of carbon

March 6<sup>th</sup> 1899

Finished 27<sup>th</sup> J. H.

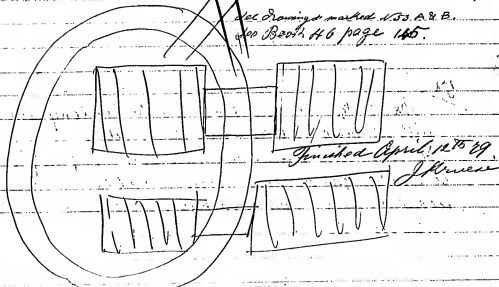
52 R Service Buffalo N.Y.  
duplicate of order 22. 20 Carbon Buttons

J. H. H.

53 Make one Magnet Machine

Will make a sketch

See Drawing marked 153 A & B.  
see Book 46 page 165.



Finished April 12<sup>th</sup> 89

J. H. H.



58. Take the cores from the two large induction magnet up stairs, and unbind the wire, and cut the cores to same length as the magnetizing magnet we use for magnetizing, also take one of the backs and drill another hole so as to put the cores  $\frac{1}{2}$  inch apart, ~~and~~ wind on each core the same amount of the same size wire as there is now on the magnetizing magnet.

March 13 1879 Batchelor  
 OT finished March 13 1879 A.

60 Take the bar of iron that comes to -  
 morrow 13 foot long and cut it in two &  
 make a magnet of it. This is an ex-  
 perimental.

March 13<sup>th</sup> 1879  
 Geo. P. Batchelor J. H.

61 Make springs for stereograph received <sup>typed</sup>  
 with the following:

- |                      |                                 |                        |
|----------------------|---------------------------------|------------------------|
| 1 Balth metal        | 2 Bismuth                       | 3 Gold                 |
| 4 Aluminium          | 5 Copper                        | 6 Pure iron            |
| 7 Antimony           | 8 Sulphide Lin                  | 9 Lead                 |
| 10 Sulphide Lead     | 11 Silver                       | 12 Lin                 |
| 13 Sulphide Antimony | 14 Sulphide Bismuth             | 15 Sulphide Zinc       |
| 16 Brass             | 17 Carbon (Canes)               | 18 Peroxide Iron       |
| 19 Selenium          | 20 Rhodium                      | 21 Palladium           |
| 22 Indium            | 23 Bismuth Indium               | 24 Magnesium           |
| 25 Aluminium         | 26 Chromium                     | 27 Manganese           |
| 28 Nickel            | 29 Cobalt                       | 30 Ruthenium           |
| 31 Selenium          | 32 German Silver                | 33 Zinc                |
| 34 Peroxide Lead     | 35 Plumbago mixed with dextrose | 36 Arsenic             |
| 37 Cadmium           | 38 Tungsten                     | 39 Plat. Iridium Alloy |

These springs must all have the same bearing  
 surface and must be marked plainly

March 13 1879


As far as metals are on hand, finished March 19<sup>th</sup> 1879 J. B.



70 Send 200 Carbon Buttons To Phila. Jps

sent Feb 19<sup>th</sup> 1879.

71 Make Electric Syphonometres after drawing  
ing March 20 1879 J.H.

72. Make 8 miniature boxes. Each box sent by 1 foot  
and five boxes 5 1/4 inches by one foot. Two of  
the latter to be made to ~~hold~~ three slings and  
two binding post, the ~~other~~ to have one sling  
and two binding post. Cut the grooves, so  
that every alternate one shall be 3/16 inch deeper than  
those cut to hold the wires simply. The grooves on  
two five in by twelve five to an inch, on all  
the others six to an inch. Make 10 holes 3/4 in  
from outside edge on the boxes with three slings,  
On the other holes  near the base

March 21 1879 J.H.

April 5<sup>th</sup> 1879 J.H.

73. Make bracket for Jan. Office for Telegraph wires after  
drawing. & have it put up. March 21<sup>st</sup> 1879.  
Finished April 25<sup>th</sup> 79. J. H. Wren

74 Make a sketch board for Jan. Office after drawing  
marked off. March 23<sup>rd</sup> 1879.  
Finished April 11<sup>th</sup> 79 J.H.

75 Make thermopiles.  
Ch. Book. No. 51. page 129, 131.

March 25<sup>th</sup> 1879

76 100 Carbon Buttons To H. Bently, Philadelphia  
March 28<sup>th</sup> 1879 No charge

Delivered March 26<sup>th</sup> 1879 J.H.

March 24<sup>th</sup> 1879

77 25 Centum Cisterns to H. Chester Boston Mass

Delivered March 26<sup>th</sup> 1879

J.H.

78 Make boxes of B. & L. Hoppers to fit a pair of our old main shaft hangers, must be so arranged that they can be put back on B. & L. H. with shaft & all at any time. The angle with old boxes to old hangers.

March 27<sup>th</sup> 1879 J. H. Merri

79 Pack Wheatstone Transmitters &amp; Repeater

Delivered March 28<sup>th</sup> 79 J.H.80 Pack Water Tapping Ob. M. 24<sup>th</sup> 79 J.H.

81 Ship 250 Carbon Batteries to W. E. McG. Co.

Delivered March 27<sup>th</sup> 1879

J. H. Merri

82 Have iron plan made for Grinders Vacuum machine.

M. 28<sup>th</sup> 1879 J.H.

83 Make mounting block of table for Chem. Laboratory

M. 28<sup>th</sup> 79 J.H.

84 Make strong gas resistant table out of 3" pine planks. for laboratory.

March 28<sup>th</sup> 79 J.H.

85 Make working draft with drawings for table

M. 28<sup>th</sup> 1879

J.H.

86 Turn off the water underneath the Engine room connect water pipe from sink to it & lead it into main drain. Close drain of the sewer from wellhouse which spoils pipe causing & leaks off the steam pipes.

March 28<sup>th</sup> 1879

J. H. Merri

87

~~Put back in the corner of House Telephone~~  
~~instead of from house~~

~~At R. ... March 28<sup>th</sup> 1889 J.H.~~

88

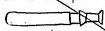
~~Mar. 29, 1889~~  
~~600 Carbon Buttons to L.H. Dillstone~~

~~soon as possible~~

~~Delivered 300 March 31<sup>st</sup>  
 200 " 31<sup>st</sup>  
 100 " 31<sup>st</sup>  
 J.H.~~

~~T.T.C.~~

89

~~Make~~  ~~30 Line buttons like this.~~

~~also 10 ten~~  ~~like this.~~

~~Finished Oct. 20 1889 J.H.~~

90

~~Make (one)~~ ~~Cylinderometer~~  
~~same~~

~~Finished April 15<sup>th</sup> 1889 J.H.~~

91

~~Wind Resistance boxes with No. 15 wire~~

~~3 boxes having one flag, each~~ ~~33 three hundred~~

~~1 box having one flag, should be trained~~ ~~2 three~~

~~1 box having three flags the distances to come~~ ~~one with~~

~~the other marked to the left~~ ~~Two green and black~~

~~of one then 1, 2, 1. One red~~ ~~Mark 1 1 1 0.5~~

~~1 box two too done too~~ ~~mark .02 .02 .01~~

~~Some of the boxes should have only one flag~~

~~Wires should be twisted to go with each, as with~~

~~the other lot. H.H. March 31, 1889.~~

92

~~Pack the press (near battery rack) for shipment~~  
~~to England.~~

~~Finished Mar 31 1889~~

~~April 16. 31 1889~~

~~J.H.~~

93 Make 24 more of the little lime bottles



for experiment

Bathurst Mel 31<sup>st</sup> 1899

J.H.

94 Snake 3 more ~~imperfect~~ flasks for Geo. Rader

March 28<sup>th</sup> 1899

Trinidad N.H. 31<sup>st</sup> 1899 J.H.

95 Draw three (3) pieces of pure iron (20)  
twenty thousandths thick and each (10)  
ten inches long.

Also -

(5) three pieces ~~pieces~~ wire

Also 3 of copper B.B. 3<sup>rd</sup> minimum

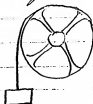
(4) four of nickel made as far as we had the  
materials J.H.

96 Make a platinum sleeve on corrugated  
diaphragm to hold a glass bulb.  
Sheet plat. must be bent round and welded  
as a bellows type of glass blowing

Trinidad Cyp. 3<sup>rd</sup> 99 J.H.

97 Make Dash cap for Dynamometer and magnetizing  
magnets and make Dash cap to resist 5 lbs of m.

Perth. Cyp. 2<sup>nd</sup> 99 J.H.



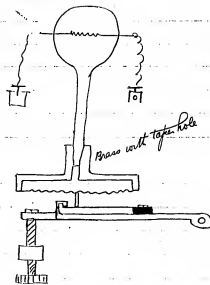
98 Send 1 Doz of anti-bottoms to Buffalo N.Y.  
in brass box & ask manager for report

Lat Cyp. 3<sup>rd</sup> 99 J.H.



29.

1 Regulator for lamp with covered plate

Apr. 28<sup>th</sup> 29 J.H.Apr 5<sup>th</sup> Batchelor.

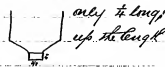
100 B 25 & 24 Make regulator in section marked 25th  
Book 24 page 13. Apr. 4<sup>th</sup> 29 J.H.

101 Make reg. f. E. L. ~~etc.~~ on B. 24 p. 17  
Apr. 4<sup>th</sup> 29 J.H.

102 1 Punch and die for lines & diam. and  
1<sup>st</sup> long

Punch to be made on ~~covered plate~~  
and a number of 2 in washers to make  
finished

Die to be made in three pieces surrounded by a large  
heavy cast iron ring  
as per drawing by him.

Apr. 10<sup>th</sup> 29 J.H.

103. Apr 4. 200 Carbon Buttons  
to Phelps ~~as per~~ ~~as per~~ ~~as per~~  
Oct - April 2<sup>nd</sup> 29 J.H.

104. Apr. 6. 1849.  
Mr. Hume: Have the table ~~made~~ put up  
for press, and make a mould made similar  
to the one taken by Dr. P. Edison for Chalks  
I want to start a box pressing buttons for  
the new receiver ~~Chalks~~ ~~Chalks~~ ~~Chalks~~  
Apr. 2<sup>nd</sup> 29 J.H.

105 Ask Patent office model for Edison's electric mass.  
See Drawing B. 24 p. 25 B, put April 5<sup>th</sup> 29 J.H.  
on same day 2 safety buttons as shown in Book 16 J. Hume  
page marked 105. & Book 24 page 54.

106 Have Patent office model for Moffitt's furnace  
also a grate ~~etc.~~ ~~etc.~~ ~~etc.~~  
Apr. 5<sup>th</sup> 29 J.H.

107 250 Carbon Buttons to W. E. ~~etc.~~ ~~etc.~~ ~~etc.~~  
Apr. April 4<sup>th</sup> 29 J.H.

108 Fix up the large ~~table~~ ~~table~~ ~~table~~  
guide & new strong table ~~etc.~~ ~~etc.~~ ~~etc.~~  
Apr. April 5<sup>th</sup> 29 J.H.

109 Make ex. experiment ~~marked~~ ~~marked~~ ~~marked~~  
page 31 to ~~regulator~~ ~~regulator~~ ~~regulator~~  
Apr. 5<sup>th</sup> 29 J.H.

110 Make ex. experiment ~~marked~~ ~~marked~~ ~~marked~~  
81 use spring ~~etc.~~ ~~etc.~~ ~~etc.~~  
Apr. 5<sup>th</sup> 29 J.H.

111 Make regulator ~~marked~~ ~~marked~~ ~~marked~~  
Book 25 page 31 ~~etc.~~ ~~etc.~~ ~~etc.~~  
Apr. 4<sup>th</sup> 29 J.H.

112. ~~Make regulator~~ ~~marked No. 2. Book 25~~  
~~page 38~~ ~~Ap. 15. 1879~~  
~~J.H.~~

113. ~~Regulator No. 3 - 2.25~~ ~~marked No. 3.~~  
~~Ap. 15. 1879~~  
~~J.H.~~

114. 12 Carbon buttons for brass tube  
 W.H. Barre Eli. Galt N.J. (Coe)  
 Delivered Ap. 17<sup>th</sup> 1879 J.H.

~~115. Reference 7. 1879~~

~~2nd location. Batteries of J. Merriken~~  
~~Pennsylvania~~

115. One doz carbon buttons in brass tube  
 J. Merriken Sup't. W.N. Filig & Phila Pa.  
 Delivered Ap. 15<sup>th</sup> 1879 J.H.

116. one dozen Carbon for brass tube  
 J. Merriken Sup't. W.N. Filig Phila Pa

117. Make lamp after sketch in Book No 4 pg. 200  
 J.H.

118. Send 100. ~~Carbon~~ Batteries to Phila.  
 Delivered Ap. 17<sup>th</sup> 1879 J.H.

119. Make Platina faced things in new  
 receiver & to be to be & wide.  
 Ap. 9<sup>th</sup> 1879

Canalic Magnesia -

Iodide of Cesium - Hypo oxide of Manganese - Hypo oxide of Lead

Plumbago (Pencil) - Powdered Galena -

Oxide of Cesium - Alumina -

120. 10. Barkness Battery to W. de Bree

~~Revisions MS~~

~~Delivered Op. 11<sup>th</sup> 29 J.H.~~

121. Make Bot. office ~~mean~~ for S. W. Smith letter  
April 15<sup>th</sup> 1899 J.H.

122. Make bushes for shaft of magnet-machine & fit  
the hand wheel and put in wheel a handle so that  
we can turn it ~~with~~ <sup>by</sup> hand at any time  
Baltimore Apr 13 1899

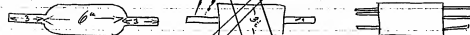
123. Send 250 P. Barkness to the W. C. App. Co

~~Delivered Op. 10<sup>th</sup> 29 J.H.~~

124. Make large counter-shaft for cone pulleys 3000.  
2" cold rolled iron and put paper boxes to hang on  
a flat iron base 10" pulleys and double 5" belt.  
Apr 12<sup>th</sup> 1899

125. Get new 24" pulley 14" face & drive B.H. Gunter  
and 1 10" pulley for same 3" face  
Apr 12 1899

126. Make 3 wooden winding cylinders for winding string  
on for experiment; 10" x 2" x 10"



Ground with 98 ground so deep  
the third & have 3 pillars on end & drive it by

127. Alter small Edison Faradic so that it will  
have 49 coils of # wire in layers of  
turns each.



Make new commutator with 49 points and  
wind coil so as to be perfectly symmetrical  
Bore off the edges of the plates so the wire will not  
catch in turning

The new commutator must be independent from the  
cylinder. New cylinder must have 1/2" shaft and the wood core must  
be pinned through, hinges being driven on tight the  
iron must go down to shaft as -  
or driven as I shall direct



further on

Apr 12 1899

Make addition to P. Barkness order 105

For 200 P. Barkness 49 for

Finished Op. 20<sup>th</sup> J.H.

128. Make one a ~~shaft~~ for telephone new receiver



Finished April 15<sup>th</sup> 1899  
J.H.

129. Fix up the Walnut ~~the~~ made for new receiver as  
a complete telephone with transmitter and call  
the Bess 22  
Apr 14<sup>th</sup> 1899

130. Make Thermo experiment see  
book No. 14 p. 245, 246, 249  
April 10<sup>th</sup> 1899

J. H. Bess

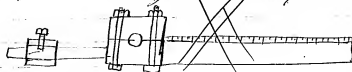
131 Make a complete set of parallel pieces  
for shop. also plates of bed of planes.  
& back for it. ~~Exp. 20th 89 J.H.~~

132 Make an Iron ~~set~~ for chemical  
Laboratory ~~Exp. 10th 89 J.H.~~

133 Send 250 Carbons Buttons &  
W. Co. App. Co. ~~Exp. 10th 89 J.H.~~

134 Fix Drumm machine that friction dynamometer  
can be put on ~~Exp. 10th 89 J.H.~~

135 Make a Dynamometer of wood



136 Make a lot of Splines for connections  
to large binding. ~~Exp. 10th 89 J.H.~~

137 Grind faces of ~~exp~~ and base of Carbon  
mould as  $\frac{1}{8}$  in away with the  
further edge ~~Exp. 10th 89 J.H.~~

138: Want 6 Bottle Carbon for The Puasco Rio  
~~Delivered Exp. 22 89.~~

139 Apr 21. ~~250 Carbon Buttons~~  
~~Exp. 24th 89 J.H.~~



140

April 21 1899

Wind 2 small Magnets (pintops) with 19 coils of  
30 wire making 10 ohms resistance  
and 24 lbs. 6 magnets to run it  
Compt. R. Ep. 28th 1899  
J.H.



141

Alter the above so that it will be just like  
an dynamo.



Cores 6 inches long

1 1/2 diameter

Wound with 31 coils of No. 20 B. wire

Wind the armature with 27 coils of 21 wire

4 turns to coil; resistance of Armature 28 ohms  
Apr 22 1899  
Compt. R. Ep. " J.H.

142.

W. Dechester Boston Nov 22. 1899

24 Carbon Brushes

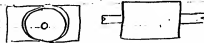
W.C. Dechester Ep. 25th 1899  
J.H.

143

Fix up one of the above Phonographs and pack  
it for shipment.  
Ep. 25th 1899  
J.H.

144

Get small dynamo (441) and make an  
a solid iron armature for a shaft as to be  
the size and perfectly in the middle.  
The armature must be exactly  
the same length as the head.  
I don't any gear wheel or it or commutator  
B.B. Apr 29 1899



145

Take the armature that Skammer made for (441)  
and take off the wire and fill up with fine iron that  
George will bring to day. Wind the wire as full as the  
Magnet head will allow  
Apr 29 1899 B.B.

Altius  
See Book

146 After 145 has been made and tried take the armature and shaft and put on shaft a wooden armature the right size for winding on the ~~wire~~ copper so as to make an armature with only copper wire and no iron.

Apr 29 1879 J.H.

147 Mr. Q. Chester ~~1300~~ 25 Buttons in brass ~~etc~~ etc

148 N.P. Dumbley Toronto Ont  
40 ~~bottom~~ ~~efficiency~~

don't forget to get ~~inches~~ from me before sending - as we will have to have it for enclosure

W. B. B. B.

149 Make 100 Brushes for ~~1/2~~ 1/2 F. mach. improvement order 58.

150 Make a Faraday machine same size as improved

38 but larger. 6" X 8" diam. 90 x 9".  
approx. 10 to 12 wire 1/2 inch / 1/2 inch strands

151. See Book 3A page 124 make electric Light and motor May 5th 1879. J.H.

152. Make a 6 ft. ~~box~~ for hand power May 9th 1879. J.H.

153. Make 100 series of electric Engines. 10 20 29

154. Make electric engine after sketch in 25. page 69. J.H.

155 1624 examine ~~copy~~ to G. B. Ladd S. F. Cal  
May 12. 1879 May 21

156 Make negotiable ~~order~~ in Book 25 page  
15 May 17th 1879 J. H.

157 Make a complete set of Orders for  
New River Telephone May 10th 1879

158 W. E. Muff & Co. J. H.  
Do & W. Phelps - 100 carbon buttons  
transmit them immediately  
May 18. 1879 W. E.

159 ~~Order W. E. Muff & Co. must have~~  
100 carbon per month after this  
W. E.

160 Make 65 ~~completed~~ Telephones.  
May 18th 1879

161 New Strong ~~engined~~ for Telephone  
rollers. See note B. cut in 3 parts.  
plumbers & parts May 15th 1879.

162 Blueprints for ~~Examine~~ 1000 battery  
Make 130 parts complete like sketch.



- 1 in machine press  $\frac{1}{2}$ "
- 2 in copper washer
- 3 in  $\frac{1}{4}$  in  $\frac{1}{2}$  in and  $\frac{1}{2}$  in and  $\frac{1}{2}$  in thread  
through it
- 4 in large copper washer so that it will not sink  
in wooden box

5 in machine screw  
May 15th 1879 Palester

~~163 Make ten or copper die 6" long  
2" wide and 3" deep for tooling  
the cartons in  
May 19 18~~

~~May 20. 1879  
164 12 Light Brown Buttons to any size to  
match for Robt. Jones R.C.  
W.C.  
filled May 20. 1879. W.C.~~

~~165 Make P.O. Model for New Green Telephone  
8 Sesine mounting for like sized my bones.  
Sesine 22 g.  
Make P.O. Model for Edison's Paradié  
machine make 2" to a foot~~

~~166 Make a machine for polishing the shells  
for New Receiver  
May 23 Batchelor 1879  
Drawing by C.B. to book~~

~~167 Cut a mica die for Agam P. Union Baker  
with Mitchell C. W.C. as sample for supply  
May 23 18 1879~~

~~168 Make 65 10 cell batteries for New receiver  
order  
May 23 1879 Batchelor~~

~~169 Make 65 New Edison Telephones complete  
for Central Station system.  
May 23 1879 Batchelor~~

over





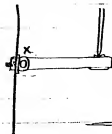
149 ~~Blue 661. B. Ship to Bergman June 1919~~

150 400 Ruyter Array to Bergman

~~OK letter to Bergman June 7, 1919~~  
vrc

181 ~~W. J. Chester, 7000  
50 carbons to June 5, 1919~~  
June 5, 1919 vrc

182. Have a ~~spring~~ ~~lever~~ made like this:  
A solid bar with a stiff joint at X  
made to ~~work~~ ~~hard~~ like an trans-  
mitter arm



~~June 2, 1919 C/B.~~

183 Have Hense turn up a (chalk) of vulcanized  
fibre saturated in caustic Potash for 6 hours  
Have given Lawson piece of fibre and he  
has got it soaking and it is ready for turning  
up  
~~June 2, 1919 C/B~~

184 Make thin diaphragms for all the  
transmitters for this order of telephones  
~~June 2, 1919~~

~~note also June 5, 1919  
185 400 carbons to Bergman  
my time within 2 weeks of date~~

Attention is directed  
Book 13 pg. 20

031/31

186

Make 6 Telephone transmitters of the  
order like an old glass in sleeve on  
thin draph. and flat plate with platina  
on on button (short circuit piece)

June 6 1879 C.B.

87 Diagram for Connections of the A.R. Telephone  
book 34 page 145

188 June 6 1879

1.00 Carbon Buttons to R. Eldredge  
mildred mfg  
m.c.

189 Make a testing machine for shafts  
on board with a few blocks to raise  
up for smaller shafts.



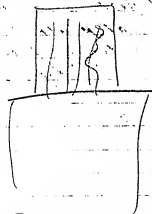
190 Make 65 brass die springs and line  
pods for the pad batteries  
June 17 1879 C.B.

191 6 Carbon Buttons to E. A. Engle  
Washington mfg. Co. St. Louis Mo.  
m.c.

192 put a piece of gauge (bar) on top of the  
magnet heads so to act as a fender and  
prevent small pieces from falling  
in between the armature and heads.



23 July 15 1879

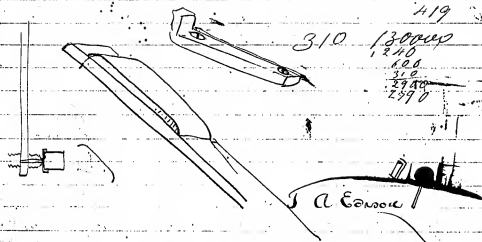


$$\begin{array}{r} 25 - 40 \\ 50 - 60 \end{array}$$

$$\begin{array}{r} 3.60 \\ 5.40 \\ 9.00 \\ 1.40 \\ \hline 9.80 \end{array}$$

$$8/360$$

$$950$$



310

130000

100  
100  
100

9.1

A. E. GORDON

193 Have Prunus ready for shipment  
Friday afternoon Direct to Dr. C. C. Bantjes  
30 Lafayette place N.Y.

194 — Send T. G. S. Glass Box 200 cc. to Cee  
130 Grammes of Powd Carbon  
D.C.P.

195 Dr. H. Decg. C. Harnack D.J.  
immediately to Dr. C. C. Bantjes  
D.C.P.

196 D.S. Carbon Button secured,  
packed for shipment to  
Dr. C. Harnack D.J.  
June 1st.

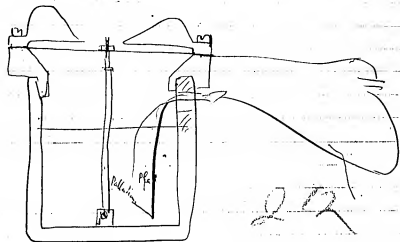
197 400 to Dr. E. H. H.  
June 30th 1949

198 400 to Dr. E. H. H.  
June 1st 1949

199 400 to Dr. E. H. H.  
June 1st 1949

200 400 to Dr. E. H. H.  
June 1st 1949

July 20 1879



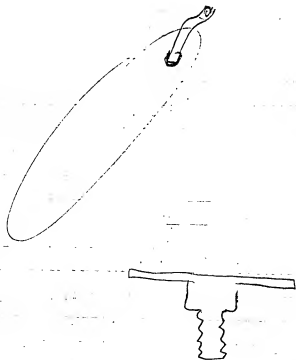
201  
July 10.

2. Carbon Buttons to Lewis & Clark  
Hawkins Resources. Ky. Do.

202 July 10th make two new boxes with sawing  
ashes new for & base for Random & Oil. Sec.  
Drowning!  
for Corollations see book 38 July 173

203 make 4 more new boxes. of rubber  
& every thing to complete 4 new telephones.  
July 9th 1879.

204. P. 0.38 wire



A

U

204. Make 1 Standard Faradic Machine  
for sizes of wire see 46 page 185 for Armature  
on the cores put 3 layers of No 10

July 10 1899 C.R.

205 Make New Receiver with worm motion to drive  
on the arm joint

July 10. 1899. C.R.

206 Make New Receiver with clockwork motion  
and fly wheel in best shape to be used in hand.

July 10 1899 C.R.

207 Make 4 Carbon Transmitter like drawing  
Book Page

July 11 1899 Shortbridge

208 Make 1 Patent Office Model as shown  
in Book 46 Page 255 & Drawing 208.

July 11 1899 Short.

209

Make an water transmitting like book 80 page 245

July 15th 1899 C.R.

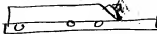
210 — 100 Buttons to Johnson with the  
next shipment of telephones

211 Alter one of our pocket telephones to hinge top of  
box, and put metal diaphragm on with 3 springs  
with rubber under them

71. Menlo Park July 25 1879

In Menlo Park July 25 1879

212 Make a platinum separator  
+ get fine scales out  
of the black sand



July 15<sup>th</sup> 1879 C.B.

213 Send with telephone to Johnson  
St. ...  
learned / Butlers

214 Do Louis (Lafayette)  
other side flat  
Butlers Co. Cal.  
one Pony longhorn Telephone

215 Do Lafae (Lafayette) ...  
one known Telephone (Pony)

216 Alter 4 telephones for England to have  
a coil in them of primary 400 turns  
Secondary 1500 turns Tertiary 400 turns and  
make a new box and base to put them. hinge  
the top of box so that we can get to transmitter  
to adjust it.

Overline Arch 28 424 also 214.

July 18<sup>th</sup> 1879 C.B.  
1879 J.H.

217 Make one coil with primary and secondary  
only but coil to be made one inch longer than  
our regular coils. Turned with same wire  
+ number of layers

July 18 1879 C.B. J.H.

Make one Patent Office model as shown in drawing  
(marked 218 July 10<sup>th</sup> 1879)

at July 10<sup>th</sup> 1879

209 Make 100 extra chalk cylinder  
on brasses, but let this include the  
one that are sent away already as  
extra.

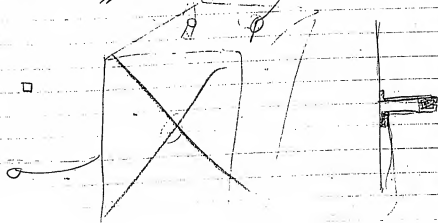
at July 23<sup>rd</sup> 1879

210 Dr Marion ~~Dr. Providence R.I.~~  
12 Barb ~~Providence R.I.~~

211 The Dr. E. J. Sanders says we must  
have a copy of the ~~copy~~ as the order  
has been ~~sent~~ (p. 50) ~~sent~~ ~~sent~~  
The Dr. Sanders has ~~sent~~ ~~sent~~ ~~sent~~  
them to ~~sent~~ ~~sent~~ ~~sent~~

July 25<sup>th</sup> 1879

212 Make Patent office model for this ~~transmitter~~





213 Make an Ore concentrator, iron pan 12" diameter, double

Blank shaft  $\frac{3}{4}$ " ~~from handle to other~~

belt motion ~~water pipe~~

$\frac{1}{2}$ " in approx  $\frac{3}{4}$ " ~~ring~~



$\frac{2 1}{2}$ " in  
each type  
 $\frac{1}{2}$ " pipe

July 25<sup>th</sup> 1889.

J. H. Russell

214. July 29<sup>th</sup> 1889 — Telephone order.

Mr. Russell —

The four inertia telephones with small proboscis  
candle carbons on your desk are all right  
and may be packed immediately.

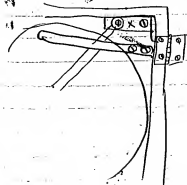
The four Bergmann transmitters telephones on  
Flammus' bench must have new boxes on,  
with inertia telephones of thick mica and  
connection strips spaced to diaphragms. They  
must have a rubber mouthpiece from the  
Bergmann telephone screwed into the wood so  
instead of turning the wood into the shape  
of a mouthpiece.



In all the instruments you pack, put a  
little watchoil in all working parts.

Do not address any to Parkas

Make a small clamp in corner for clamping  
the connection strips as:



as as both put both the wire from  
hinge and strip from diaphragm on  
one screw but make plate X & screw to  
the older hinge wire but & have  
clamp washer at end to fasten strip.

over

I think it would be best to platinise the hinges just where the springs touch in order to insure good connection.

Put a spring on one chaff with Palladium ~~20~~ twenty hundredths wide and flat so that it makes a track on the chaff that wide. and see that all the springs on the other three make tracks as wide as themselves.

In the unita telephones make jacking candle buttons and make them thus: -  
rounded at both ends



215 Make 10 telephones complete like order 214

OK. July 31 1899

216 500 Carbon Buttons to Dr. Deaconson immediately

OK  
Commanded

217 12 Carbon Buttons HJ Beatty Phil Pa

OK

218 Make 13 telephones complete like order 214

OK. July 31st 99



81

219 ~~App for Prices of nuts for ind. birds~~  
~~.005 for Primary~~  
~~.010 " Second~~  
~~.057 " Primary~~

~~220 - 6 (Set) <sup>Aug 12-1899</sup> Co. West 13 Buccoms~~  
~~Washington D.C.~~


221 ~~Sec about 64 Tap~~

222 ~~Wind S. W. W. magnets with 3 layers~~  
~~of 18 miles~~  
~~8 Primaries with 6 Turned 4 layers~~  
~~of 18. 24 single Aug 12<sup>th</sup> 1899~~  
~~J.H.~~

223 ~~20 Buttons to~~  
~~of Knife Buffers my~~  
~~W. J. B.~~

224 ~~100 Buttons to W Union~~  
~~Supply stock~~  
~~OK sent me~~

225 ~~2 doz Buttons~~  
~~to Pittsburgh Pa~~ <sup>sent</sup> ~~OK n.c.~~

225 Figure out the mile for new Pacific Road.  
 And order. Amature to be named three miles  
 together 4 layers with 2 turns. & the last with one  
 turn do.  19 mile - 0.42. Distance  
 Aug. 25<sup>th</sup> 1899  
 J.R.

226

175 barons Button  
 H.P. length Subr  
 Total 23  
 Calane

227

6 barons ~~Barons~~  
 20 J. F. Morrison  
 10 W. B. Porter  
 Georgetown  
 U.C.  
 soon as possible

228

500 barons ~~barons~~  
 70 California  
 800 C

229 Make 500 Telephones.

Aug 18<sup>th</sup> 1899  
 J.R.


230 Prepair Large Parrot made. et al.


Sept 12<sup>th</sup> 99  
 J.R.

6.9


7.26

231. Make an other *Lewing m. motor* &  
also in the following manner  
Imature  $1\frac{1}{4}$ " more. Diameter (18) longer  
~~increase to~~

Field 4 layers instead of 3  
Armature 6 " ~~instead of 4~~  
Keep field magnet same. 6 layers on armature same  
size wire, make brushes to Sept 12th 1889.  
Touch on top & bottom so.  J.H.

232. Repair Parathic. motor No. 2.  
Take 2 of the iron wire off & replace it  
finer, new brushes to touch so.   
fix commutator, etc. Sept 12th 1889.  
J.H.

233. Fix a lathe head for glass flower  
to grind Sept 12th 89. J.H.

234. ~~Make Lamp stand to hold~~  
  
~~Lamps~~ Different shades & Electric  
Sept. 13th 89  
J.H.

235. Make a *Glossworth Telephone*  
ac. to Drawing Sept 15th 89  
J.H.

236. Make an Electric motor for  
Lamp regulator  
Sept. 15th 89  
J.H.

237 Make a Telephone recor. with a  
4 inch Diaphragm J.H. Sept 13<sup>th</sup> 29.

~~238 Make a new Die for Chalks for New Press  
1 7/8 Diameter & plugs 3/4 long Top & Bottom  
7/8 so as to have an entrance for them of  
1/8" Sept 13<sup>th</sup> 29  
J.H.~~

~~239 Make a new guiding mould for  
E. L. Chalks. Sept 13<sup>th</sup> 29  
J.H.~~

~~240 Make a ~~die~~ plug for line  
mould for E. L. Sept 13<sup>th</sup> 29.  
J.H.~~

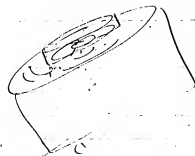
241 Design & make a cheap little  
lathe for Johnson to turn  
the chalks of the Top by hand  
beads stationary. Mandrel with large  
collar on end to set the tool by.  
Sept 13<sup>th</sup> 1889.

J.H. Mueser

242

Make a new carbon Transmitter  
for English Telephone order  
Sept 20<sup>th</sup> 29  
See Drawing J.H.

718



J. Egan's contract in Book No. 16.

243 ~~W.E. Hays~~  
 2000. ~~Carton~~ ~~to Chicago~~ ~~See~~  
 500. ~~Carton~~ ~~to~~

~~Carton~~ ~~to~~ ~~See~~

244 130 ~~Tram~~ ~~to~~ ~~See~~

245 7 B A David ~~Pittsburg Pa~~  
 24 ~~Carton~~ ~~to~~ ~~See~~ ~~Oct 11-10-2~~

Oct 15<sup>th</sup> 1899  
 246. Make a Chalk mould with hole  
 in diameter for Johnson London

Oct 15<sup>th</sup> 1899  
 247 Make a Chalk mould with hole  
 in diameter for Paris France

Oct 15<sup>th</sup> 1899  
 248 1 Left handed telephone

Oct 15<sup>th</sup> 1899  
 249 Make 50 extra Chalk boxes for exper-  
 iment

Oct 15<sup>th</sup> 1899  
 250 Make 15 more large chalks for Johnson

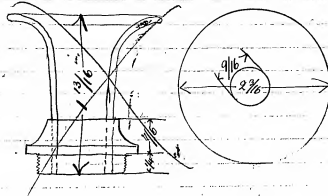
251 200. Carton W. E. Hays

*Buttons for Buttons  
strings for 100 Buttons*



*Buttons*

252 Oct 17<sup>th</sup> 29 Make 2 rubber mounts  
pieces



253 100 Carb. Buttons in 10 boxes  
~~W. H. Supply Depot.~~  
~~taken in by order~~ Oct. 21 '29

Oct 21  
254 Telegraph Supply House Co.  
Cleveland Ohio  
12 Carbon Buttons n.o.  
428 order

Oct 31  
255 M. D. Wood, W. H. Co. Kansas City Mo.  
12 Carbon Buttons n.o.  
428 order

256 T. W. D. Co. Chicago Ill.  
500 Carb. Buttons  
U. S. Mirror Shipped Oct 22 1829 J. H.

257 Oct. 28<sup>th</sup> 500 Buttons for Buttons to  
Chicago Ill.  
Shipped Oct 28<sup>th</sup> 1829

258 Oct 28-1879  
1000 Buttons to W. H. Co. Chicago

259 Oct 28.79  
12 Buttons to Tele. Supply & Clearing Co. Chicago



W. Kuezi

260 Instrument No 124 and 137 have been sent to Bentley  
Instrument No 134 and 149 have been sent to Barber of Philadelphia

261 These Instruments will not come back again so you had better fill up the numbers for Johnson  
Also find out what numbers the four instruments Mart took were and fill them up.

Betchelor

262 Make an arrangement to break the current of the Magneto Faradic machine quick & to connect the same time the bridge thus



Oct. 25th 1899 J.R.

263 Wind the Oborg m. motor with double covered wire put on as much of it as possible for commutator so that the motor will start at any point

Oct. 25th 1899 J.R.

264 Repair Carbon in the

Oct. 25th 1899 J.R.

265 Put steam bath in Chemical Laboratory to draw better and repair it in general

Oct. 25th 1899 J.R.

266 Have the Vault finished that it can be used

Oct. 25th 1899 J.R.

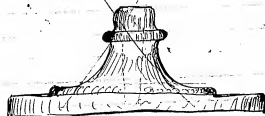


276. Make 100 extra Slaves for Walkers  
for London. Nov. 5th 1829.  
J.R.

Nov 4th 1829  
277 Pack & Ship the Assort Slathe to  
London, also 100 Chalks, 1 Saw with ~~iron~~  
arbor, 1 Rethodag, 1 arbor with handwheels and for  
chalk sleeves, 1 gauge for chalks, Two Drawers for bits,  
Tools, 1 imp. wood geared chucks Whittons Patent,  
6 Brushes saws and for setting Chalks.  
12 Bittles of solution 8 talbe tools for  
side rest. J.R.

No 1 remade.  
278 Make the armature of Paradise machine  
No 43. In. But here is only .010 spec between  
copper wire & magnet or binding wire &  
magnet. Wind it with .035 copper wire  
Saddle covered as usual, One Layer  
H. Turned, 75 Commutators

279 Make 12 wooden lamp stands (polished)  
with 2 Bindingposts on each.



Nov 5th 1829  
J.R.

Diameter bore in face 9.21875

Diameter core —  $\frac{.156}{9.062}$   
 $\frac{.314}{36.248}$   
 $\frac{.9062}{27186}$

Circumference 150)  $\frac{27186}{28454.68}$  (189  
 $\frac{180}{1348}$   
 $\frac{1296}{1754}$

4  $\times$  189 inch for each coil  
 $.04725$  for each wire

Wire .035 .035  
 Coating .012 .013 The wire with .013<sub>A</sub> coating  
 probably be fitted in.  
 $\frac{.047}{.048}$

Thickness of wire .048

For wire to hold .010

Play  $\frac{.020}{.018}$

Tooth  $\frac{.018}{.018}$

Total on both sides  $\frac{.018}{.156}$

Resistance of one strand No. 20 wire over  
 round the machine (Total 20 turns) Machine  $\frac{1}{16}$  the  
 Four strands  $\frac{1}{8}$  <sup>the</sup> machine = .125 ohms

No. 2 machine 468 turns

No. 1 remodeled 75 or  $\frac{1}{6}$  the No.

No. 2 machine .625 in between coil of

iron and face of armature

No. 1 remodeled .256 in  $\frac{1}{4}$  the distance

No. 2 500 revs. 110 Volts

No. 1 Remodeled 750 ~~revolutions~~ should give 110 Volts

Nothing is allowed here for heating or for irregularity  
 in the iron core

Nov. 13.

About 4 lbs of wire needed

No. 1 remodeled

280 Take the armature from No. 1 machine  
 and change as follows

Make Commutator with 75 divisions

Make new vulcanized fibre ends  $9.21875$  inches  
 in diameter 9.062 inches in diameter

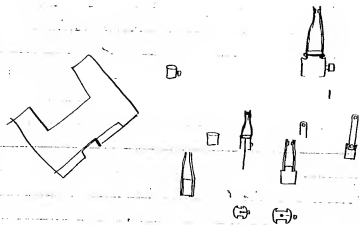
Wind the iron core with fine iron  
 wire, well oxidized if possible, this must be  
 done so that no part has a larger  
 diameter than 9.062 inches and all as  
 near that as possible

~~Wind the core armature with one layer  
 of No. 20 wire .035 inches in diameter  
 Each coil will consist of two wires  
 wound twice round and will make  
 the machine have about  $\frac{1}{2}$  the resistance  
 The wire will be held in place by  
 German silver or~~

Wind with one layer of No. 20 wire  
 .035 inches diameter double wound .013 in. coating  
 Four wires side by side one turn  
 in each coil. Groove the outside edge  
 of vulcanite fibre so as to hold the  
 wires in place that as they are carried  
 to the commutator block. <sup>or else</sup> Hold the  
 wire in place with .010 iron wire in  
 the same manner as in No. 2 Machine

Dec 8 This machine was well made  
 and gave 45 Volts !!!

100 B. 34 of Bill



280.

Make 2 bars and put letter clips on them to be used for writing on  
to be put at the right hand of telephone  
Nov 9<sup>th</sup> 1829.

281.

200 Carbons for H. P. Dwight Suppl.  
Toronto Ont.  
Invoice must go in box for notice  
Nov 11<sup>th</sup> 1829.

282

12 Carbon Buttons for H. P. Dwight  
Chicago Ill.

1/2

200 Carbons for H. P. Dwight

283

500 and 1000 Photographs to Dr. J. W. Dr. J. W.  
Bras. Philadelphia Pa.

284

Make 8 Wooden mouthpieces  
for Chili Telephones

2 Trans wrenches

2 Receiver "

2 Adjust pins

Chalks 1 Bras Carbon Button Box for 240.

1 Chalk quagi.

And parts in box 34 page 54  
Nov. 17<sup>th</sup> 1829 J.W.

285

Make a line shaft for  
H. Gardie machines & fix up  
a nice & clean room for them  
and a partition across the shop.

(Lo's Book 79  
page 202)

Nov. 17<sup>th</sup> 1829 J.W.

Nov. 18<sup>th</sup> 1899

286 4 Relay instruments and bells  
complete to be delivered to  
J. F. Bailey.  
Passenger Steamship "Germanic"  
to be put in Stateroom 55-

287. Four new suitcases for order  
286.

288 10 pairs of clamps for Electric Light  
Nov. 19<sup>th</sup> 99 J.H.

289 Twenty pair clamps for Electric Light

290 15 Nutwood Chacks  
Western Electric Chicago  
Immediately J.C.

291 500 Carbon Buttons  
Western Electric Chicago  
Immediately J.C. Nov 21<sup>st</sup> 99 J.H.

292 Make 25 wooden lamp stand  
Same as 299 but a little heavier  
when lamp goes in see sketch.  
about it  
Nov 21<sup>st</sup> 1899

293 Make 2 more carbonizing mounds  
for paper same as made before  
Nov 21<sup>st</sup> 1899

294 Make 30 more pair clamps for Electric Lamps  
of mod. size wire Nov. 23<sup>d</sup> 1879 J.H.

295 Make a clamp to cut paper for 300 Light  
des Drawing for. Nov. 24<sup>th</sup> 1879 J.H.

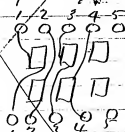
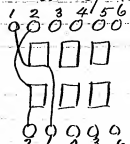
296 Alter Faradic machine to 3 To a 1/2 ohm one  
Make new Pile ends and get it to run with the  
last amount of force between armature & magnet.  
Nov. 24<sup>th</sup> 1879

297 On the wooden lamp stands that  
Andrew is making put a pair of platinum  
points so



Nov 24<sup>th</sup> 1879 Chas. Satchler

298 Fix 4 Switchboards and change  
time to Bergman. They are connected  
wrong so they ought to be 1-



Nov 25<sup>th</sup> 1879 Nov 26<sup>th</sup>

I have written Bergman about it.  
Chas. Satchler

~~299. Make 50 pair clamps for lamps~~  
~~Nov 21<sup>st</sup> 1899~~

~~Order for copper 2.160 x .025 one turn~~  
~~Nov 29~~

~~300 Make another clamp to cut paper~~  
~~for lamps but to clamp with~~  
~~screws etc.~~



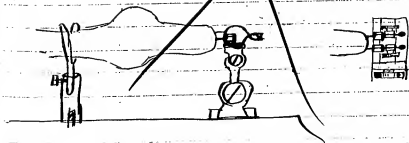
Start Bradley on it  
 right away and  
 ever mind the  
 die get

Never mind



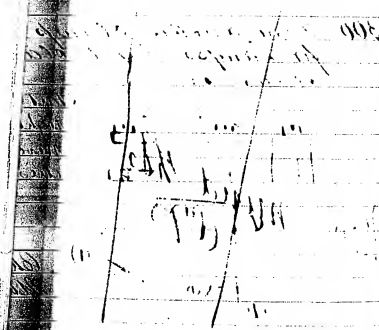
Chas. B. Cheln  
 Nov 30<sup>th</sup> 1899

~~301 Make an instrument for receiving~~  
~~the clamps and holding the clamps~~  
~~whilst patting in the loop.~~





1000 lbs. of wire for the  
 1000 lbs. of wire for the



1000 lbs. of wire for the  
 1000 lbs. of wire for the



302 Make fifty more clamps for electric light  
 Dec. 20 1919 J.H.

303 Alter the electric light meter  
 Dec. 20 1919 J.H.

304 Make 4 Glass blowers tables with balance  
 same as the wooden ones in use  
 Dec. 20 1919 J.H.

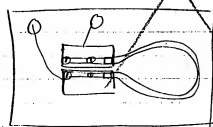
305 Make 4 Carbonizing Chambers of  
 wrought iron  
 Dec. 20 1919 J.H.

306 Have street lamp posts made &  
 make sketch for same Dec. 20 1919.

307 Send 100 Orders to London  
 with next list of requirements  
 Dec. 20 1919 J.H.

307

Dec 10<sup>th</sup> 1899  
 Please make an instrument for  
 measuring resistance of carbons



308.

Have 12 muffs  
 made for us.



309

Send 500 Carbon Buttons  
 to Western Electric Chicago Ill  
 (Order record per photograph) Dec 10<sup>th</sup> 1899 J.P.

310

Send 2 of Bergmann's Thermoses  
 to U.S. Winter, Washington D.C.

311

Order 22 lbs of Lybra wire Dec 12<sup>th</sup> &  
 60 m.p.s. and 60 m.p.s. 0.035 diameter for 3  
 Sent Dec. 12<sup>th</sup> 1899  
 J.P.

312

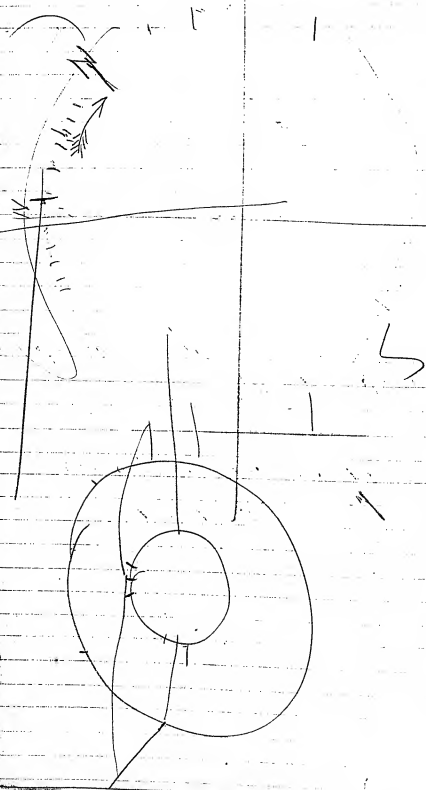
Divide 22 lb. 3 lb. layer 4 side by side with  
 60.035 wire to 4 wires together  
 Dec. 12<sup>th</sup> 1899 J.P.

313

Bring out the hole for armature  
 9.62 inches in diameter

313. Make No. 4 with ~~9.62~~ 9.62 inches bore of magnets  
 Make armature 9.05 diameter of  
 wire wire  
 Wind 4 layers in three of .042 wire  
 39 coils in wire in width  
 the same as No. 2  
 Measure carefully when made.  
 Make madder one 6 1/4" diameter order for N.E.  
 314 Make one carbide ring should cut of a  
 Cantel & Hanson Battery Carbine  
 finished J.H. Dec. 15<sup>th</sup> 1899
- 315 - send 500 carbons to  
 Dr. Elec. Mfg. Co. Chicago, Ill.  
 shipped 14<sup>th</sup> Dec. 15<sup>th</sup> 1899 W.E.
- 316 Please make 200 platina clamps  
 for lamps like previous ones.  
 Dec. 16<sup>th</sup> 1899
- 317 Please get some .015 platina wire  
 for lamps  
 ordered 14<sup>th</sup> Dec. 16<sup>th</sup> 1899
- 318 Send Buckeye Engine Pump to J.H.  
 Dec. 14<sup>th</sup> to J.H.  
 shipped 14<sup>th</sup> Dec. 14<sup>th</sup> 1899

Drop  
 Drop



329 Make a Bandnet Circumference of inside coils  
 2.81 width of side of loop .025 Diameter of inside .894  
 outside .944

~~320 17. Centroni Bellows  
 E. P. D. supply Cleveland Ohio  
 order of Bellows Co. = 1921  
 Delwood K.~~

321 To be attached to immediately & completed  
 before December 31st 19

I Paradio machine No. 4

II 100 lamp cups

III 100 pair of lamp clamps Platinum

IV gear up pumping motor

V Switch for Central Station regulator

VI get up 15 Double burner chandeliers

VII fit up the motor complete

VIII 10 street lights

IX Double board side walk on the square  
 to Depot

X get Kerite wire for street lamps

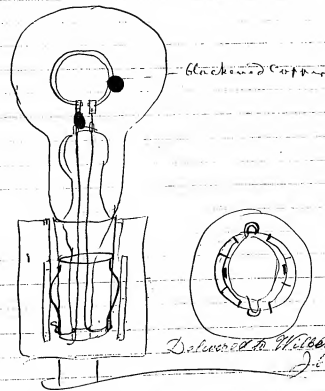
XI Central Station cleaned  
 oil clothed & fixed up.

Dec. 20th 1899  
 J. K.

322 L. Schaek Instruments for  
James M. Ames. Richmond, Va.

323 L. Chalk Telephones for Mr. Mayes N.B. Co.

324 Patent of Model.



Delivered to Wilson Dec 27  
J. L.

325 24 Carbon Bistones  
H. Bawley Philadelphia Pa.

Dec 27. 77 Finished Dec. 22. J. L.

326 Weight on Trade machine  
weight without armature 15.68 lbs.

J. H. Munn

327 Western Electric Chicago  
600 Carbon Bells  
Dec 31. 79 J. H. Munn

328 Speed up Dynamo Counter Shaft to 1700  
revolutions per mt. 35.52 35.52 35.52 35.52 35.52  
Jan 20 1880 J. H. Munn

329 Alter No 3 Machine to a 14 ohm  
Machine use steel ion coils in place of wire  
12 wire to a Condenser

Jan 20 1880 J. H. Munn

329 ~~Reorder for 100 lbs of wire  
Western Electric Co.  
Jan 3. 79~~

330 Order 45 lbs of Double cotton covered wire  
Jan 30 1880 J. H. Munn

331 - Jan 5  
400 Carbon Buttons to H. P. Dwight Toronto Ont  
be sure and have nice put in box for  
Customs

W. C.

5. 2. 1. Microphones to H. P. Munn to replace  
Microphones

J. H. Munn

Levy 7

Send 50 Leadworth Bullion to

Manager of N. W. Kelly Co. ~~Levy Pa~~

Ohio Pa

Me





Shipped for express May 20<sup>th</sup> 99  
 Canon light portable machine. Marked.  
 Leggett & Co. N.Y. for Arctic exp.  
 Also in same box 1 battery for  
 Baxters engine B. & H. 11000 bars  
 & 1400 ft of No. 11 B. Apparatus  
 also 25 ft of 4 in Bell & 50 ft of Sauer

1. Photograph. Canon and own make  
 made as a model

May 21<sup>st</sup> 1 grate bar pattern per exps.  
 to C. Carver to cost 40 P.

May 22<sup>nd</sup> 99. 300 E.S. Carbon paints  
 delivered at Francis H. Leggett for  
 Arctic expedition.

250 Carbon Batteries to Ch. Ill. May 26<sup>th</sup>

May 26<sup>th</sup> 99. 1 Empty Gasoline M. to Dicks

May 27. 350 C. Batteries to W.B. May. Wis.

May 27 bbl with Batteries to Bergman

" 29 250 Carbon Batteries exp. Chicago

" " 11 " " " Pittsburgh David

" 31<sup>st</sup> 1400 four mod. & fifty C. Batteries W.B. May

June 2<sup>nd</sup> 50 Carb. Bat. to Boston

" 3 100 " " Bergman

" 8<sup>th</sup> 160 " " Chicago

Shipped with express  
 1 in May 21<sup>st</sup> 99  
 1 in May 22<sup>nd</sup> 99



Sept 1 Complete Telephone to Bergmann given  
by ~~him~~

Oct 2<sup>d</sup> 2 Complete Telephones for Models  
to Bergmann No 53 & 54. & one extra  
transmitter.

Oct 3<sup>d</sup> 2 complete Telephones to Roster for  
London. Nos 38 & 40.

Oct 4<sup>th</sup> 1879

Make 2 Rosewood or Mahogany mouthpieces  
& drawing of No 4. made this day  
Baicheln

Oct 5<sup>th</sup> 1879

Ship to London 12 Telephones  
Nos. 55 56 57 58  
29 33 29 26  
46 43 35 24

Also with them 3 Electrotypes

Shipped Oct 6<sup>th</sup> 9 AM. J.P.

Oct 7 1879 Ship to London by

2 men going on Wednesday

4 Telephones No. - 59. -

60-61-27 Shipped J.P.

Oct 7 Deliver to Mr. Bailon at their  
shop in New Church St New York

② two new telephones -

① one transmitter -

Oct 9<sup>th</sup> Sent to London 23 telephones<sup>235</sup>  
as follows.

No. 62, 63, 64, 65, 66, 67, 68,  
69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81,  
82, 83, 84. Shipped Oct 9<sup>th</sup> 3 PM  
J.P.

~~Make a left hand instrument (Telephone)~~  
~~in same set.~~ Oct 10<sup>th</sup> 1879  
J.P. Macri

Oct 15<sup>th</sup> 79 Sent to London  
35 Telephones. as follows:

No. 85, 86, 87, 88, 89, 90,  
90, 91, 92, 93, 94, 95, 96, 97, 98, 99,  
100, 101, 102, 103, 104, 105, 106, 107, 108, 109,  
110, 111, 112, 113, 114, 115, 116, 117, 118, 119

Oct 22<sup>nd</sup> 1879 Shipped to  
Arnold White 11 Queen Victoria St.  
London Eng.

36 Telephones Numbered: 166, 139, 128,  
130, 124, 156, 113, 136, 129, 138, 135, 148, 131,  
132, 163, 152, 146, 147, 155, 153, 120, 162, 141,  
122, 126, 168, 158, 159, 164, 161, 157, 151, 144, 140,  
169, 165

Also six Telephone Scrap books. To E.H. Johnson.

Boxes marked Arnold White 11 Queen Victoria  
Street E.C. London  
care of Hayward & Pury  
47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

170  
 141  
 152  
 213  
 215  
 220  
 508  
 30 1/2  
 511  
 No. 67 Number  
 No. 87  
 No. 114  
 No. 257

Shipped Nov. 6, 79. To London

1 Complete. Shunt good little with slides & 2 the following extras

1. Whiton Church, 1 saw on aster, 1 Bette Day
2. Drawers, 1. Shards for chalk slides, 1 gauge
1. Slides boots, 1 hand tool, 1 cutting tool
1. flat drill for driving chisels. 2 cases.

100. Chalks, 5. Bag. Boxes of solution and  
 6. Camel hair brushes. 1 case OK

Nov. 8<sup>th</sup> Shipped 2 telephones by Lighttype to  
 London today  
 171 No. 172. OK

Nov. 10<sup>th</sup> 79 Shipped To London today

30. Telephones No. 110, 126, 128, 130, 134, 205,  
 200, 140, 192, 201, 202, 184, 186, 210, 203, 189, 209,  
 211, 183, 193, 185, 208, 204, 174, 206, 187, 189, 196,  
 191, 189. Have and send 6 BHP. OK J.R. OK

Nov 11<sup>th</sup>

143 121 178 214 197 170 215 204  
 501 502 503 504 505 506 507 508 509  
 (the 501 Bergmann.) also 216 by hand list  
 also 100. Chalks (water chalks).  
 2 Levitch boards

Sent 12 Nov. 1879

Nov. 7<sup>th</sup> 79 One complete today telephone  
 No. 175 & one base for a  
 Bergmann J.R.

Nov. 18<sup>th</sup> 1889 To J. D. Husbands Valparaiso Chile S.A.  
Care of 81 Chambers St. N.Y.

6 Complete relay telephones, 1 complete Smith board,  
100 Carbon Buttons, 15 Chalks without sleeves, 5 Chalks with sleeves not  
turned, 2 Chalks on sleeves finished not used.

6 Wooden mouth pieces, 3 extra composition mouth pieces,  
6 Binding posts complete, 3 rubber springs, 3 steel spring washers,  
2 Transmitters Diaphragms, 3 " " pins, 3 " " screws, rings,  
2 Receivers " " 1 Top piece plate for Transmitter,  
3 Balance connections of Transmits, 1 Receiver spring Retaining 2 glasses,  
3 Transmitter adjusting screws, adjustment of telephone screws & washers,  
4 Key buttons, 1 Mouth handle, 2 Receiver wrenches,  
2 Transmitter wrenches, 2 Chalk wrenches, 2 adjusting pins,  
3 Complete Push buttons.

Numbers of Telephones: 182, 177, 173, 180, 174, 180.

OKJC J. H. H. C.

Nov. 20<sup>th</sup> 1889.

Shipped 23 Bergmann Telephones To London  
No 526, 526, 534, 523, 529, 515, 532, 558, 536, 520, 528,  
551, 532, 534, 551, 543, 533, 553, 555, 535, 527, 517, 556.  
& 100 Chalks. P.R.R. freight J. H. H. C.

Shipped 4 Complete Relay Telephones not numbered  
To J. F. Barclay steamer Germania Bremen Nov. 28<sup>th</sup>  
J.H.H.C.

Shipment of Telephones for London  
No 558, 568, 567, 562, 537, 554, 546, 516, 517,  
557, 520, 539, 521, 522, 535, 540, 549, 560,  
524, 542, 513, 514, 519, 525, 586, 529, 522,  
541. Bergmanni also (4) four Smith boards.  
" 218, 217, 160, 216, 220, 222, 223, 221 of  
P. A. Edison's 120 Push button springs  
120 square bodied push button screws with platina  
points Shipped freight J. H. H. C.

1382  
25  
4146  
2164  
3118  
311  
1382  
28  
11954  
6

A  
appears to be an  
arrangement for  
using Stearns  
Differential to  
branch offices.

It requires 3 wires  
to the branch offices  
(the same thing can  
be easily effected  
with 2)

C  
This instrument  
was ~~been~~ in  
operation in  
the N.Y. W M of  
2 months or  
more ago.

1382  
13820  
2764  
2764  
304

1382  
13820  
13820  
13820

Shipped Nov. 29<sup>th</sup> to London 28 Telephones.  
No. 596, 592, 563, 603, 572, 571, 530, 578, 574, 594,  
575, 585, 544, 591, 545, 599, 597, 587, 571, 581,  
601, 569,  
154, 221, 145, 222, 219, and one postage from  
J.H.

J.H.

Shipped to London freight 21 Telephones  
No. 545, 618, 609, 634, 644, 624, 702, 616, 613, 638,  
246, 261, 260, 241, 231, 255, 239, 235, 243, 238,  
265

Also 100 Bricks and 2 Strick Boards

Dec. 9<sup>th</sup> 79 J. H. Menden  
10 Bergman and 11 Ciliem -

Shipped to London 4 Cases - 24 Telephones  
No. 232, 236, 248, 254, 244, 247, 252, 247, 259,  
245, 257, 229, of ams and  
691, 689, 635, 685, 704, 668, 653, 663, 695,  
716, 660, 626, of Bergmann's  
Dec. 10<sup>th</sup> 1879 J. H. Menden

Shipped to London freight Dec. 13<sup>th</sup> 79  
56 Telephones, 96 Bricks, 4 Strick Boards & 4 Ship Boards  
No. 237, 240, 253, 228, 234, 223, 233, 242, 258, 266,  
293, of ams and  
632, 613, 584, 681, 619, 617, 710, 679, 627, 628,  
669, 698, 674, 636, 656, 641, 680, 623, 672,  
641, 637, 684, 706, 605, 700, 579, 610, 632, 533,  
642, 696, 694, 675, 705, 676, 683, 614, 708, 646,  
678, 622, 615, 620, 693, 677, of Bergmann's  
Dec. 8, 1879 J. H. Menden

56  
13820  
13820

13820  
13820  
13820  
13820

J.H.

$$\begin{array}{r}
 2347 \\
 \underline{1178} \\
 1169 \\
 \underline{1349} \\
 401
 \end{array}$$
  

$$\begin{array}{r}
 2347 \\
 \underline{1178} \\
 1169 \\
 \underline{1349} \\
 401
 \end{array}$$

Dec. 16<sup>th</sup> 2 bbls. 3 cases AM 11 TU.  
 I. Shipped to London (as freight & New York) per Davies  
 No. 664, 671, 686, 712, 686,  
 264 271, 284, 256, 252, 275.  
 and 1 case with 2 bbls. with 2 bbls. with 2 bbls.  
 15 TU.  
 II 639, 709, 665, 811, 233, 693, 670, 694,  
 232, 289, 273, 294, 280, 270, 281, 246, 285, 288  
 287, 282, 283, 274, 292, 233, 290.

Dec. 26<sup>th</sup> Shipped to London

650 733 218, 731 735 747, 811, 805 798 813  
 742 795, 784 816 229 776 722 760 773 727  
 774 758 746 768 754 801 806 775 800 761  
 684 781 764 866 740 752 778 692 728 644  
 745 792 739 648 725, 27 of Bergmann  
 279 288 286 269 250 225

15. 2311

Dec. 29 To W. H. Painter Washington  
 2 Telephones No. 580 & 662  
 from Chicago Painter  
 Bergmann sends no. 2111 Express. J.H.

Jan 30 1880 Shipped per Davies  
to London

125 Bells (wood) 86 Bells. & the  
 following set of Telephones: 779, 639, 714,  
 709, 780, 286, 629, 903, 893, 819, 724, 791, 814,  
 608, 755, 661, 282, 744, 631, 787.

155 2/3





## Foreign Addresses

1. Argyll Duke of London Eng?
2. Argyll Alfred Professor au Lycée Fontaine 9 rue de la Harpe Paris
3. André Charles Del observation Lyons France
4. Adams J. Carr H.H. Place Hotel de la Paix London Eng
5. Bell A. Graham Prof. Physicist London Eng?
6. Beethle Col. Geo. 9 rue de la Harpe Paris France
7. Breguet M. Electrician Paris
8. Broussin E. & Co. Engs Paris
9. Baudry J. Cate. Fontaine de la Harpe Paris France
10. Cully R.D. Electrician London Eng
11. Clarke Latimer
12. Crocker Prof. Chemical news office London
13. Darcy Eng. Boy Court Ludgate Hill London Eng?
14. Deschanel A. Privat Physicist Paris
15. Electrician The 396 Strand London W.C.
16. Everett J.D. Physicist Queen's College Belfast Ireland
17. Ferguson Prof. Glasgow Scotland N.B.
18. Gausard Col. Geo. 2<sup>nd</sup> 106 Lombard St London
19. Hughes David E. Prof. Physicist London Eng
20. Huxley M. Electrician Paris
21. Huxley T.H. Prof. London Eng?
22. Higgins M. Exchange St London Eng?
23. Jenkin Fleming Prof. Edinburgh Scotland N.B.
24. Jones Rufus. Acoustician Paris
25. Lachy J. Norman Prof. Spectroscopist London Eng?
26. Lindsay Physicist London Eng?
27. Le Monde Electric Paris France

James M. Wilson  
Care Mrs. F. Elphinstone  
1149 Strand London  
June 15, 1878  
Mr. A. C. C.

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1. Maxwells Clerk Prof. J. Cambridge Eng?
2. Marcel du Court Paris France
3. Mathias A. Electrician London Eng?
4. McLaughlin Frank & Brown & Jensen 55 Chancery Lane London Eng?
5. Mottage Les D. 54 Cheapside London Eng?
6. Puckas Mrs. Langham Hotel London
7. Pica W.H. Cable Station Paris
8. Playfair & Son London
9. Dr. Richardson London
10. Raligh Lord "
11. Sprague John T. Electrician London
12. Stewart Ruffus Physicist "
13. Schellen Prof. Cologne Germany
14. Smith Willoughby Electrician London
15. Sturtevant
16. Sabine Robt. Physicist "
17. Spagnoli C.E. Electrician "
18. Spottiswoode M. Physicist
19. Siemens G.W.
20. Tissandier M. Physicist Paris France
21. Tait P.G. Prof. Edinburgh Scotland N.B.
22. Tyndall John Prof. London Eng?
23. Thomson D. W. Glasgow Scotland N.B.
24. Varley Cromwell & Electrician London Eng?
25. Walker C.V. F.R.S. London
26. Zetzsch Prof. Dresden Germany

~~Domestics:~~

~~Samuel Edison Port Gratiot Mich  
 Geo H. Bliss 220 Kinzie St Chicago Ill  
 T. B. A. Davis Pittsburgh Pa (occasional paper)  
 Mr McKenzie Spirit Files Wash DC (occasional)  
 Ed Johnson Washington D.C. ( " )  
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 Henry M. Bentley Local Tel Co Phila Pa~~

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 Small Box*

~~Franklin A. Badger Care Fire Alarm Telegraph Montreal Que~~

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Address:-

Porter, C. Bliss 40 Seventh Street New York.

Saturday June 7, 1878. Mailed the Franklin Inst. Journal, April 1878, to the following addresses

Prof Schellen	Prof Tyndall	Alfred Angot	Sir Wm Thomson	Prof Helmholtz
Prof Stewart	" Ferguson	Cromwell	Chas Andrus	U Meirisch
Thos. Parker	Litzsche	Prof Hughes	Geo & Gouraud	
W H Beece	W Smith	Lathin Clark	M. Spitzer woods	
D E Hughes	M Hardy	Prof Crookes	Robt Sabine	

Saturday June 8, mailed NY Tribune containing letter <sup>rept of progress</sup> and two minor to the following addresses

Prof Schellen	Huyley	Walker CV	Harvey	Spangli
Sir W Thomson	Am & Hottage	Tyndall	Prof Fleming	Spangli
Thos Parker	Fitzgibbon	Chas Lathin	Tait Prof	Lodge
Brett	Adams	Siemens	Ferguson Prof	Higgins
Cromwell	Callahan	Varley	Biquet	Sabine
Chalmers	Angot	Andrus	Crookes Prof	Wittigly
The Electrician	Uggle	Blauwer	Ernst	Cully
Reynolds	Darcy	Le Mond	Muller	Spangli
Prof Helmholtz				Thompson

Monday June 10<sup>th</sup> sent Washn Star of April 26 & 78 to following

Spangli	London Times	Gouraud	Sir Wm Thomson	Electrician
---------	--------------	---------	----------------	-------------

Bundley Paris

Monday June 10<sup>th</sup> sent Prof Baire Journal July June 15-17 (renewal relay)

also Washn Weekly Star, April 26 & 78

Thursday June 13 sent J Bundley Editor Fontaine Journal of Electricity

Cop of Herald (June 11 doing well interest) Graphic (Philadelphia) Tribune (Chicago) and Washn Weekly Star April 26.

Monday June 11<sup>th</sup> sent Scientific American of June 22 to all addressees on pages 271 & 272 from No 1 to No 10 inclusive and to full list of addressees mail box

Sunday June 16 sent Kd Journal June 15/77, Renewal Relay to

Prof Helmholtz	Bundley	Seabrooke	McCormick	Belge
Proctor	Browning	Tréve		

June 17

also sent my kin to Seabrooke June 17

" " Washn Star " "

June 17<sup>th</sup>

Sent Sunday June 17<sup>th</sup> to following

Page	Browning	Iron	Engineering	Belge	W Siemens	Eng Mechanic
Valk	Engineer	Lancaster	Figian			

June 17<sup>th</sup> Weekly Star, April 26 - sent to

Helmholtz	Patterson	Figian	Kippe	Tréve	Iron	Belge	W Siemens
Engineering	Eng	Browning	Mathur	Emechanic	Proctor	Mond	

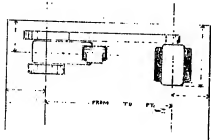
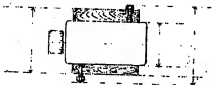
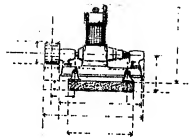
June 17<sup>th</sup> sent Washn Daily Star of April 9<sup>th</sup> to Chidley

June 17 sent J Am of June 8 to

Page	Mathur	Valk	Proctor	W Siemens	Eng	Rebuck	Engineering
Iron	Emechanic	Belge	Lancaster	Kippe	Tréve	Figian	
Nature	Helmholtz	Browning	Chidley	Patterson	Cannelly		

J A supplement June 8

Valk	W Siemens	Seabrooke	Mathur	Eng	Engineering
Iron	Emechanic	Proctor	Belge	Lancaster	Page
Kippe	Tréve	Figian	Nature	Helmholtz	Browning
Chidley	Patterson	Cannelly			



1. Bottle of white laquer  
 Newville 163 Williams Street  
 2 1/2 inch laquer brushes.



6  
 .054  
 125  
 101

[ITEM FOUND IN BOOK]



# Cable Code for McLaughlin

Baltimore - Have sold Australia entire

Bordeaux - Have sold Australia

Bergen - " " New South Wales

Baldwin - " " Victoria

Constitution - Sail for Sydney Monday

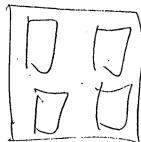
Constitutional " " " Tuesday

Unconstitutional " " " Wednesday

Constitutionality " " " Thursday

Unconstitutionality " " " Friday

Constituent " " " Saturday



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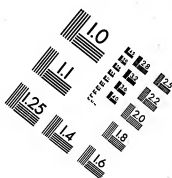
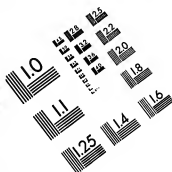
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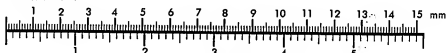


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